

AUG 14 1922

# AMERICAN ARTISAN and Hardware Record

VOL. 84. No. 7. 620 SOUTH MICHIGAN AVENUE, CHICAGO, AUGUST 12, 1922. \$2.00 Per Year.

## Sell This Remarkable Heater Which Burns Soft Coal Without Smoke—the Superior **SUPER-SMOKELESS** Furnace

Superior **Super-Smokeless** Furnaces have been tested in soft coal regions under everyday conditions. They entirely eliminate the smoke problem and operate successfully with the cheapest grades of soft coal--the smoke and gases ordinarily wasted are utilized as fuel.

The **Super-Smokeless** feature is secured by the admission of heated air (oxygen) above the combustion dome, on the principle of the Bunsen Burner. Heavy smoke and gases are changed to extremely hot flames that swirl through the radiator, generating more heat from less coal than ever before possible with a soft coal furnace.

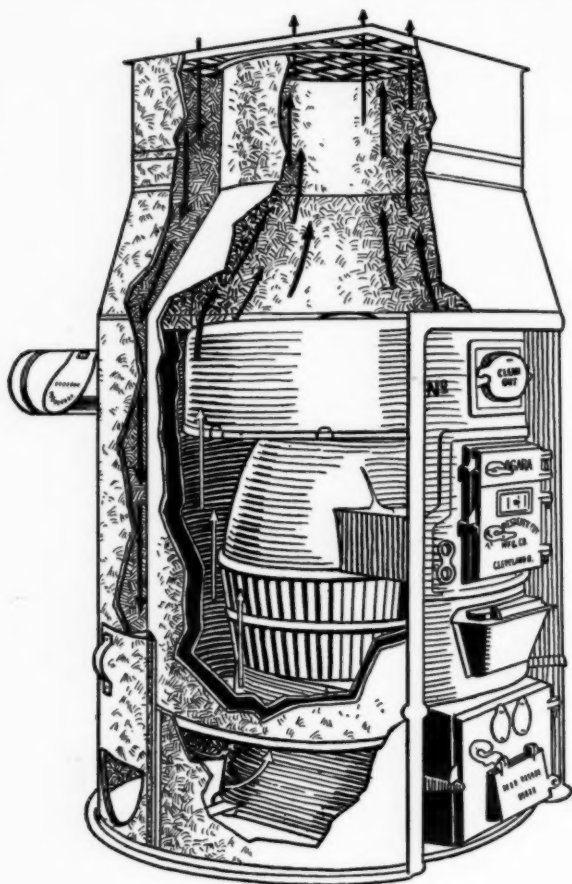
Get the agency for **Super-Smokeless** Furnaces—pipe or pipeless. Satisfy a big, definite demand for heating plants that can burn soft coal without smoke. Replace furnaces and boilers of equal heating capacity with **Super-Smokeless** Furnaces which are cleaner in operation, use less fuel and burn the cheapest grades of coal successfully.

Write today—specify whether you wish to sell pipe or pipeless **Super-Smokeless** Furnaces, or both. Don't delay if you want this money-making agency—it means you can control the heating business in your territory.

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Saves one-third of the fuel.

A super-heater.

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*Durable, efficient, and  
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& MANUFACTURING CO.**

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*One of the oldest manufacturers  
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### NESBIT-STANDARD FURNACES

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Larger Casings—Heavier Castings—Generous Proportions.

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4219	19"	42"	30"	12"	9"	14½x14¼
4821	21"	48"	34"	12"	8"	14½x14¼
5224	24"	52"	41"	15"	10"	14½x17½
5627	27"	56"	44"	15"	10"	14½x17½
6029	29"	60"	47"	15"	10"	14½x17½

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the Hardware, Stove,  
Sheet Metal, and  
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Ventilating Interests

# AMERICAN ARTISAN and Hardware Record

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## BASE YOUR SELLING ON THE BUSINESS REVIVAL.

If you believed that there was a time-fuse bomb located somewhere in your building and that your store were going to be blown to smithereens at any moment, you would not put much energy into your merchandising.

In other words, the fear and uncertainty engendered by such a situation would have the effect of destroying your enthusiasm and confidence in the orderly development of your trade.

Your state of mind, therefore, has everything to do with the successful operation of your business.

You will be able to put more vigor into your selling efforts if you become convinced that there is no hidden bomb anywhere, figuratively speaking, and that all the economic forces are operating in your favor.

It is equivalent to a recharging of the storage batteries of your mind to learn that authoritative analysis of present conditions warrant you in concentrating your enthusiasm, confidence, and ability upon greater selling efforts today.

The summary of industrial conditions throughout the United States set forth in the monthly business review of the Federal Reserve Bank of Atlanta shows that there is a continuance of business and industrial activities at the relatively high rate recently attained.

In fact, production has shown further increases in some lines, while in those which normally would be noticeably affected by sea-

sonal influences, decreases on the whole have been relatively slight.

At the time, prices have continued their upward tendency. As the current month progressed the effects of the coal and railroad strikes began to make themselves felt.

This influence has served recently to restrain productive activities in various lines, notably iron and steel. The plans recently announced by the administration are expected to relieve the situation.

The output in various lines of manufacture showed further improvement in June.

This was particularly noticeable in the case of iron and steel, copper, automobiles, and tanning.

Construction activity has been well sustained. The amount of bituminous coal mined in June showed a considerable increase, but since the opening of the present month has fallen off greatly. Coal stocks have consequently been further drawn upon. Petroleum output has continued large; stocks are, in fact, accumulating.

A further reduction in the number of persons out of work was reported during June and scarcity of labor continued to be noted, especially in the building trades.

Agricultural prospects are still very satisfactory for the country as a whole. On wholesale trade there was a general improvement during June.

Consider these conditions, and base your selling on the facts of the business revival.



## Random Notes and Sketches.

By Sidney Arnold

**D**OC WEATHERLY, the famous furnace physician and surgeon of Grand Rapids, had the time of his young life at the recent annual outing of the Michigan Sheet Metal and Roofing Contractors' Association.

The accompanying pictures show

"Trow" Warner is the proud possessor of year-old boy who when he grows up will step into his father's shoes as Chicago manager for the Tuttle & Bailey Manufacturing Company.

At the present time, however, the young gentleman is engaged in the



Here Is Some of the Evidence That Doc Weatherly Enjoyed the Michigan Outing.

him with three of the many ladies who were fascinated by his charming personality.

The pictures were taken during the visit to Milwaukee.

It would have required a wheelbarrow full of films to photograph him with all the ladies who were willing to pose with him for our photographer.

\* \* \*

A. W. Glessner, who takes his vacations on transatlantic steamers, likes to tell a story about Charlie, his nephew, who has a youngster about eight months old.

It seems that Charlie has not had a great deal of experience in pacifying babies, but for some reason he thinks that his singing will put this particular baby to sleep.

But "A. W." said the other day when he was down at Charlie's for dinner, that the youngster is showing unusual discernment and keenness of mind, because she stopped crying the moment Charlie began a lullaby, for "as you know, that nephew of mine knows about as much about singing as I do about flying."

interesting occupation of learning to walk, and his father is exceedingly proud of his achievements in the art of navigating, saying that it reminds him of the period of 1918 when he was negotiating trenches in France. Sometimes you slid along in the mud on the broad side of your breeches; sometimes you made a frantic jump from one safety spot to another; sometimes you just sat down so hard that somebody had to help get you on your feet.

\* \* \*

"Judge" Grosscup, the highly polished representative of Anchor Brand wringers and mouse-traps, usually enlivens the lunch hour at The Hardware Club of Chicago with one or more good stories from his frequent trips out West, and here is one of his latest contributions:

Some years ago in Arizona a man was sentenced to pay a fine of ten dollars or go to jail for ten days. He had only three dollars and the court accepted that in lieu of three days' imprisonment.

By some carelessness on the part of the jailer the man was kept in

jail for the full ten days. Naturally he demanded redress when released and, after long consideration, the judge announced:

"Court expenses has done eat up the three dollars you give us, so we kain't pay you that back. Also we ain't got three dollars in the court treasury. But you sure are entitled to somethin', so I suggest that you commit the same offense over again and we'll give you three days' rebate and only keep you in the cooler for a week."

\* \* \*

H. E. Doherty of Detroit Safety Furnace Pipe Company, Detroit, Michigan, is the father of twin boys.

In a measure, that fact accounts for his being so bald.

The other day, the twins were discussing their father's baldness.

"Would you paint a rabbit on dad's bald head?" asked one twin of the other.

"Why?" queried the other.

"Oh, just to give him a bit of hare," was the answer.

\* \* \*

### *Forget It.*

If you see a tall fellow ahead of the crowd,  
A leader of men, marching fearless and proud,  
And you know of a tale, whose mere telling aloud  
Would cause his proud head to in anguish be bowed,  
It's a pretty good plan to forget it.

If you know of a skeleton hidden away  
In a closet, and guarded, and kept from the day  
In the dark, and whose showing, whose sudden display,  
Would cause grief and sorrow and life-long dismay,  
It's a pretty good plan to forget it.

If you know of a thing that will darken the joy  
Of a man or a woman, a girl or a boy,  
That will wipe out a smile, or the least way annoy,  
It's a pretty good plan to forget it.



# The Latest News About Stoves and Ranges

Items and Discussions of Interest to the Manufacturer and Retailer of Kitchen Ranges, Heating Stoves and Accessories.

## Allen Williams Finds Good Reading Matter.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

May I congratulate you on your issue of August 5th, and thank you for the particularly good reading matter it contains relative to ranges and warm air heaters.

ALLEN W. WILLIAMS,  
Secretary National Warm Air Heating & Ventilating Association.

Columbus, Ohio, August 7, 1922.

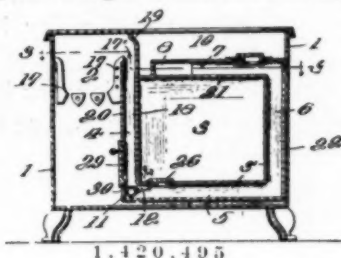
Note—I also appreciate the kind notice you have given the printed proceedings of the National Warm Air Heating and Ventilating Association.—A. W. W.

## Combined Gas and Coal Range Is Patented.

Frederic G. Nicolaus and Joseph Roy, Cleveland, Ohio, assignors to American Stove Company, St. Louis, Missouri, a Corporation of New Jersey, have secured United States patent rights for the com-

bined coal and gas range herewith illustrated and described:

A combined coal and gas range comprising a housing, a fire-pot therein, an oven within the housing and spaced apart from the fire-pot forming a downwardly extending flue communicating at its upper end with the fire-pot, said flue extending around the oven and communicating at its upper end with a chimney flue, a burner having an elongated end located adja-



ent the bottom of the downwardly extending flue with its elongated end extending beneath the oven bottom, and a gas burning slit located in the end wall of the extending end of the burner and adapted to direct the flame across the bottom of the oven, for the purpose described.

## Lots of People Are Planning to Move into Stove-Heated Flats to Avoid High Rents.

*A Big Percentage of Them Will Need Heating Stoves, and You Can Secure the Business by Going After It.*

THE last week of August in most of the big cities and in many towns of moderate size is the time for renewal of October leases.

This means much to the alert stove dealer.

It is an opportunity for speeding up sales of kitchen ranges and heating stoves.

Rents are not coming down this Fall.

In numerous cases there has been intimation of a slight advance in the rentals not only of apartments but

also of stove-heated flats.

In a considerable percentage of renewals of leases, tenants are looking about for more favorable terms.

Many of them will decide upon renting a stove-heated flat in order to save the difference between the moderate rentals of such places and what they consider the exorbitantly high rentals of steam-heated apartments.

With comparatively few exceptions, stove-heated flats are not equipped with heating stoves.

The renter is required to bring his own heating stove with him when he moves into such a flat.

Thrifty families compare the cost of high rentals of steam-heated apartments with the more moderate rentals of stove-heated flats and they figure that the cost of the heating stove will pay for itself in one winter in the cheaper rentals and that they will have the full ben-

**YOU** can sell more heating stoves this Fall than you did a year ago.

It is simply a matter of getting a sufficiently big list of prospective renters of stove-heated flats.

Among such prospective renters there are many who are moving into stove-heated homes from steam-heated apartments.

They will need new stoves.

Moreover, there is the opportunity of replacement sales to those who have heating stoves which are beginning to look dingy or which have reached the end of their term of usefulness.

All this business is yours, if you work hard enough to get it.

Be assured that no one is going to lead a procession with a brass band to your store and humbly present a petition to you beseeching you to condescend to sell a heating stove.

fit of the cheaper rentals of the stove-heated flat the following year.

This is the selling argument for the stove dealer which makes it easy for him to increase the volume of his sales.

It is not difficult to get a line on such prospective renters.

By applying to real estate agencies in his business territory, a hardware dealer who sells heating stoves

can usually get the names and addresses of the prospective tenants of stove-heated flats.

Then, by intensive circularizing of these prospective tenants, he can prepare a way for effective personal solicitation.

These two methods of stimulating sales can be strengthened by judicious advertising of heating stoves in local newspapers.

This is a profitable branch of the stove business and it can be made to yield satisfactory returns by rightly directed selling efforts.

It is true that a certain amount of business comes to the hardware dealer without special work on his part.

But he has to earn most of the orders he gets.

Work is the universal law of success.

And, whether it be with pick and shovel or pen and pencil, most of us are compelled to earn our bread by the sweat of our brow—figuratively or literally.

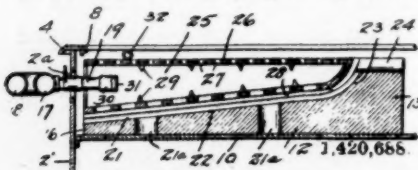
Hence the harder you work in getting a definite list of prospective customers for heating stoves and the more intelligently you follow up the opportunities embodied in such a list, the greater will be your actual sales.

Bear in mind that all work of this sort brings other sales as well as those of stoves.

The customer who buys a heating stove from you and gets full satisfaction from the transaction is favorably disposed toward you and, consequently, becomes a prospect for other articles of hardware and household commodities which you carry in stock.

### ***Secures Patent Rights for Cook Stove.***

Leopold B. DeLaitte, San Francisco, California, assignor by mesne



assignments, to May Erdin, San Francisco, California, has secured

United States patent rights under Number 1,420,688 for a cook stove described herewith:

A gas cook stove having a combustion chamber, a heat-insulating bed arranged in said chamber, and an incandescent heating body disposed upon the bed below the top plane of the stove.

### ***Overloading Your Tomorrow Ends in Failure.***

The man who expects to do great things tomorrow will do well to provide the time for doing them, says The Leader, organ of the Automotive Equipment Association.

Most of our tomorrows are already overloaded with the work of today, yesterday, and the day before yesterday.

When they arrive, this work has to be got out of the way before we can start the big job.

By the time they are clear, we are too tired and sleepy to undertake it.

The men who get things done are the men who arranged in advance for the time in which to do it.

No lawmaking body can provide a day with more than twenty-four hours in it. If six or eight of those hours must be spent catching up with past work there will be no time for what in legislative parlance is called "new business."

Rest and recreation are so attractive and delightful to most of us that we are tempted to take them when we can, borrowing the time from the future.

Borrowed time is even more bothersome than borrowed money, for it must be repaid and there is no possible way to create a surplus out of which to pay it.

It is quite possible, if you have borrowed a hundred dollars that you can make repayment of it by and by with little inconvenience, to yourself.

But if you take away three hours from next Thursday only that exact amount of time will be available next Thursday and the chances are a hundred to one you are going to need it for something else.

The tomorrow that is not overloaded, that is a clean page on which to write fresh needs, may be the turning point in your career.

The "tomorrow" whose time is all mortgaged and on which principal and interest must be paid will be of very little use save for "making up" lost time.

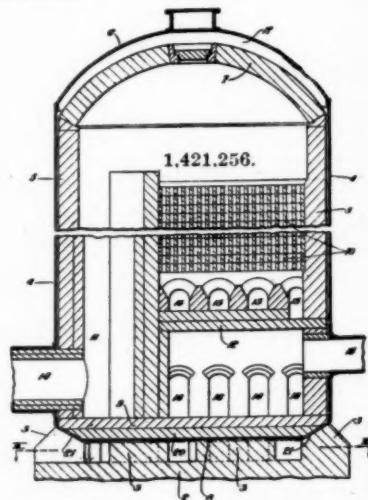
The worker who counts his days—and who in business is not a worker—be he President, Salesman, Salesman, or laborer—ahead and arranges that each shall be allotted its eight hours of work will soon find himself getting ahead and accumulating the leisure in which to do the big, important things we all want to do.

The man whose "tomorrows" are all overloaded is going to find each of them more wearisome and more nerve racking than today.

Eventually he is compelled to bow to the inevitable—failure.

### ***Patent Rights Are Granted for Hot Blast Stove.***

Fred E. Kling, Youngstown, Ohio, has secured United States patent rights under Number 1,421,256, for a hot blast stove described herewith:



A hot blast stove comprising a cylindrical side wall portion, a closed top portion, and a bottom wall, said bottom wall having an outer rim portion projecting upwardly on an angle to the remainder of said bottom.

Experience is the pay a man gets for making a fool of himself.



# Events and Progress of the Hardware Trade.

## What the Retailers, Jobbers and Manufacturers Are Doing. Latest Selling Methods and Experiences of Successful Men.

### *Helps Dealer Sell Copper, Brass and Bronze Hardware.*

A counter card entitled "Test It For Yourself," is being distributed among hardware dealers for counter display by the Copper and Brass Research Association, New York City.

The card has a convenient easel back which makes it possible to stand it securely on the counter.

A magnet is attached to the card,

in order to enable the customer to adopt the suggestion made by the title, by putting into effect the well-known magnet test for detecting the coated or dipped species of imitation hardware.

A small dealer folder on which the Copper and Brass Research Association is printing the hardware dealer's name, below a bit of hardware selling talk on behalf of Copper, Brass and Bronze hardware, is also being furnished to dealers.

"We need go back only two years to observe the truth of this aphorism in its most convincing form. The unprosperous producer can not deliver the goods, the unprosperous distributor can not pay for them and the closer their relations, the better for both.

"One of the questions equally interesting to distributor and producer is the economic limit to the quantity of goods purchased.

"Over-buying is as injurious to the one who oversells as to the one who overbuys and is related closely to the economic rate of production of which we know so little and to the rapidity of turnover of which we know so much and neglect so constantly in practice.

"Indeed, distribution and production are inextricably interwoven. Each element is found to be affected by all of the others and a study of one leads at least to the wish for a better understanding of them all.

"Although this is called a National Fair and is one on this its first occurrence, I venture to prophesy that not many years will have passed before it becomes recognized as an international opportunity.

"Foreign producers and designers will find it essential not only to visit future Fairs but to display their wares.

"They need not only to sell to our buyers but in order to sell effectively they must study our markets and our individual preferences.

"In like measure, foreign distributors will find it the one best method to become acquainted with our products and the possibility of another source of supply for their customers.

"A double competition will arise from these visits which inevitably will react beneficially to all concerned.

"American manufacturers will

## *Coordinated Buying and Selling Is the Way To Unify Interests of Dealer and Producer.*

### *The Manufacturer's Prosperity Depends on the Dealer's Success; and the Dealer Can't Exist without the Producer.*

**F**URTHERANCE of the newer understanding which has arisen of the common interests that bind manufacturer and merchant together is seen by Alvin E. Dodd, manager of the Domestic Distribution Department of the Chamber of Commerce of the United States, as an outgrowth of the first National Merchandise Fair held this week in New York City.

Speaking at the Fair on "National Consciousness in Retail Distribution," Mr. Dodd declared that both manufacturers and merchants are coming to realize that the prosperity of the one is dependent on the prosperity of the other."

Another development, said Mr. Dodd, will be that future fairs will take on an international aspect, bringing the buyers and sellers of various countries to the exhibitions.

"These Fairs," said Mr. Dodd, "will witness the expanding recognition of a comparatively new conception. I refer to the growing understanding that the interests of the merchant and the manufacturer are not opposed, but are the same inherently; that the old formula 'buy

cheap and sell dear' which assigns conflicting purposes to the distributor and the producer will be replaced by the knowledge that each is but a part of one great whole and that injury to one immediately reacts unfavorably upon the others.

"These Fairs inevitably will bring about discussions of their common problems and interests among these several parts by the convenience arising from their physical presence in the same place at the same time.

"I need not recount to you the many factors of styles, credits and useless competition which excite all of you and which will yield to the sympathetic study by composite committees of your several groups.

"The work already has a beginning and as its first results are understood generally it will grow from the effects of its own self-created appetite.

"Coordinated buying and selling' is a good phrase and expresses my notion in a very few words.

"It means that the buyer should be, even for his own protection, interested in the prosperity of the seller.



learn what the goods of their foreign brethren have to tell them and will have a new form of propaganda to attract foreign markets for the disposal of their surplus.

"I may well predict, too, that the future National Merchandise Fairs will become increasingly as the years pass the opportune times for holding the stated meetings of trade associations and organizations connected with or interested in the distribution of commodities.

"Metaphorically expressed, 'one hand will wash the other.' No one, I believe, will venture to dispute the idea that even the small merchants of distant towns and critics will sense the need to attend these Fairs whether they find themselves able to do so or not; but the double chance of attending the Fair and his national trade association meeting will be too great to be resisted by thousands of merchants who now stay at home vegetatively awaiting the arrival of the traveling salesman whom they depend upon to fertilize and cultivate their stocks.

"While this First of the National Merchandise Fairs is somewhat strongly flavored with dry goods and ready-to-wear, the time is not far distant in my opinion when its visitors will have displayed for their inspection a thoroughly representative series of exhibits embracing pretty nearly everything sold at retail."

### ***Hardware Club of Chicago Will Picnic on August 29th.***

The annual outing and picnic of the Hardware Club of Chicago will take place at Ravinia Park on Tuesday, August 29th.

There will be a baseball game, running races, and many other contests of skill and endurance for which valuable prizes have been donated by manufacturers. Members, their friends and families are invited to attend. While it is suggested that members bring basket lunches along, there is a very good restaurant in the park where all sorts of refreshments, both liquid and solid, may be obtained at reasonable prices.

### ***Explains the Force of Sales-Resistance.***

Some needful lessons regarding what is commonly called "sales-resistance" are given by The Corn Exchange, published by the Corn Exchange National Bank, Philadelphia, Pennsylvania, as follows:

Lately a housewife looked up from the morning paper and remarked to her husband:

"Isn't it odd that the want ad sections of newspapers are crowded with advertisements for men to act as salesmen? And I can't recall a time our door was besieged by as many canvassers as now."

The storekeeper from whom this family bought most of its supplies remarked to his wife:

"I can't understand what's caused our trade to take such a sudden slump lately. It seems as if our customers had almost suspended buying. There isn't any more unemployment here now than there was several months ago—if anything, there has been a slight change for the better in that respect. It is certainly a strange situation."

An alert woman customer of this merchant's store said to a friend:

"Yesterday I bought some goods of a man who came to the door. You'd be surprised at how much I saved. There's no telling me that the goods are not up to what I've been getting at the store, for they're well known and standard brands."

Conversations of this character are symptoms of a common disease which business doctors call "Sales-Resistance." Manufacturers, wholesalers and retailers are more afraid of it than they are of the "flu."

Sketched in a few strokes, here is the situation:

Manufacturers and jobbers found themselves with stocks on hand and business falling off. When pushed for orders, the reply of the retailers was: "We can't buy because we can't sell. The goods we have already bought are still with us." For a time the manufacturers and jobbers accepted this explanation with good grace. Then they began to come back at the retailer.

"Put your prices down, and pay the notes on which we're carrying you. We must liquidate our stocks. The only way we can liquidate is for you to sell the goods you have and make room for more."

Those who found that this argument failed to produce the desired effect, applied themselves to the problem of sales resistance. Something had to be done. Many manufacturers and jobbers decided to smash ancient and semi-sacred trade traditions, and appeal direct to the consumers. This procedure is about as revolutionary in established trade circles as wearing evening clothes for breakfast would be in the social world.

Some of these direct appeals to the consumer were open and brutal; others were disguised as sales-promotion campaigns nominally for the purpose of helping the retailer. All of them have succeeded in arousing the ire of the retailer and winning his resentment. This seems to be a fair and comprehensive summary of the casualties.

Most manufacturers and jobbers who entered into this direct-to-consumer campaign did so without the slightest expectation or desire to remove the retailer from the chain of distribution, but only to meet a unique emergency and force a deadlocked situation which seemed to require dynamite.

One result of this painful experiment has been almost universal, according to the best authorities.

Manufacturers and jobbers have learned many facts about their goods and the attitude of consumers towards them that they never suspected before this hand-to-hand contact with the consumer was established.

The most conservative manufacturers and wholesalers who have never harbored the idea of displacing the retailer, declare that the retailers will eventually receive immense benefit from this forced appeal to the consumer. As one manufacturer put it:

"This forced drive into the consumers' trenches has taught me more about the faults and the merits of

my goods than I've ever learned before. It has given me a liberal education in what kind of an appeal will sell them to the consumer. And, above all, it has given me a rich fund of knowledge about the retailer and his qualifications and performance as a trade ambassador representing my interests in the Court of the Ultimate Consumer.

"All this new knowledge is going to help the retailer in the end—for his place in the chain of distribution is secure. We don't wish to dispense with him if we could; it is more convenient to keep him than to supplant him.

"But this trying and irregular experience has made it possible to help him to retail more intelligently as it has helped us to manufacture and to wholesale more intelligently. This experience will also be reflected in more intelligent advertising."

A successful salesman, in a line which includes both necessities and luxuries, has this to say:

"My 1922 sales are almost up to those of 1921. How has this been accomplished? By hard—*harder!*—work. I have refused to be depressed by talk about 'rotten business.' Neither have I allowed my selling punch to be deferred by the talk that business would pick itself up by the bootstraps at some later date, and that it would be useless to attempt to push it before that time.

"My job has been to forget the economic dope sheet and *do business today!* This has been largely a matter of learning each retailer's stock. I've found that every one of my customers is short something every time I call. I sell him that because he needs it. I never before studied the stocks of my trade as closely as I do now.

"Again I spend much of my time in educating retailers how to organize their sales and clean out their surplus stocks. I tell them frankly that the consumers are holding them responsible for delaying price readjustment, and that taking losses on their surplus stocks will not only bring in needed money, but will also help to retain or rebuild the confidence and good-will of the consum-

er, which are considerably shaken today.

"Every good salesman today is a missionary of education to the retailers. Of course, some of the retailers resent this. But most of them owe the jobbers and the manufacturers too much money to refuse to listen to this gospel of education."

One sales manager of a large corporation placed in the hands of all his salesmen two sheets which focus the results of a sweeping and systematic research. "Why Customers Do Not Buy From Us," is the title of one.

The other takes the reverse of this inquiry. This, he declares, has greatly stimulated thought on the part of his selling force.

Also, he claims that the intensive pressure put on salesmen today has developed the fact that an immense amount of time and salesmanship effort is wasted trying to sell men who have not the authority to buy.

Before discussing the case of the retailer, it is only fair to remind all concerned—and especially the consumer—that the producer of raw materials is naturally, inevitably, the first to reflect a changed economic condition in a change of prices.

The manufacturers and the jobbers are next in line and the retailer is last. And it doesn't matter whether the pressure is up or down, the same sequence is observed. This is an economic law which is universally recognized by competent authorities.

Another feature of sales-resistance should not be forgotten; this is a malady that can not be cured by the patent nostrum of class legislation or by the laying on of legislative hands. It will run its economic course in spite of all Congressional "bloc" action or artificial tinkering.

### ***Men and Women Act Differently in Buying.***

A man from the country strolled into the store, greeted the proprietor with a breezy "Hello," re-

marked about the weather, crop prospects, the latest dog fight and a few other important matters and eventually remembered that he wanted a curry comb.

He took the first one handed him, tossed a dollar on the counter, shoved the change into his pocket without counting, helped himself to an apple, and leisurely followed his nose to the street.

Ten minutes later a woman walked briskly in, bade the clerk a smiling "Good morning," and promptly requested to be shown thus-and-so.

She picked it up, felt of it, held it up to the light, twisted it, turned it over, examined it from every vantage point, considered the price—and rejected it. It was not just what she was looking for.

Did the clerk have something else? He did. Three somethings were shown her without any better results. Then the light of the world returned to her first love, tested it, fondled it, caressed it, and told the clerk she "guessed it would do, although not just exactly what she wanted."

She paid for it, counted her change carefully, let her eyes roam over the store, took note of numerous things she wanted later on and departed for her next visit.

Women are born shoppers.

### ***Make Your Advertisement Convincing and True.***

The day of the sandwich man and the standing ad are fast going; advertisers are waking up to the fact that advertising must convince, and to convince, it must present logical reasons for favorable action—do so in an attractive way.

Effective advertising takes the point of view of the man to be sold. If it takes the seller's point of view it measures up to the sandwich man's effectiveness; it isn't advertising—it's simply publicity.

To succeed in advertising, the advertiser must make the reader stop thinking his own way, and make him think as suggested. The reader must be interested in the advertised proposition.



# Suggestions and Plans for Window Displays.

Instructive Examples from Exhibits in AMERICAN ARTISAN  
AND HARDWARE RECORD Window Display Competition.

## USES LIVING MODELS IN WINDOW DISPLAY.

Persons suffering from hydrophobia are popularly supposed to have a mortal fear of water.

It is doubtful, however, if even the most rabid case of hydrophobia

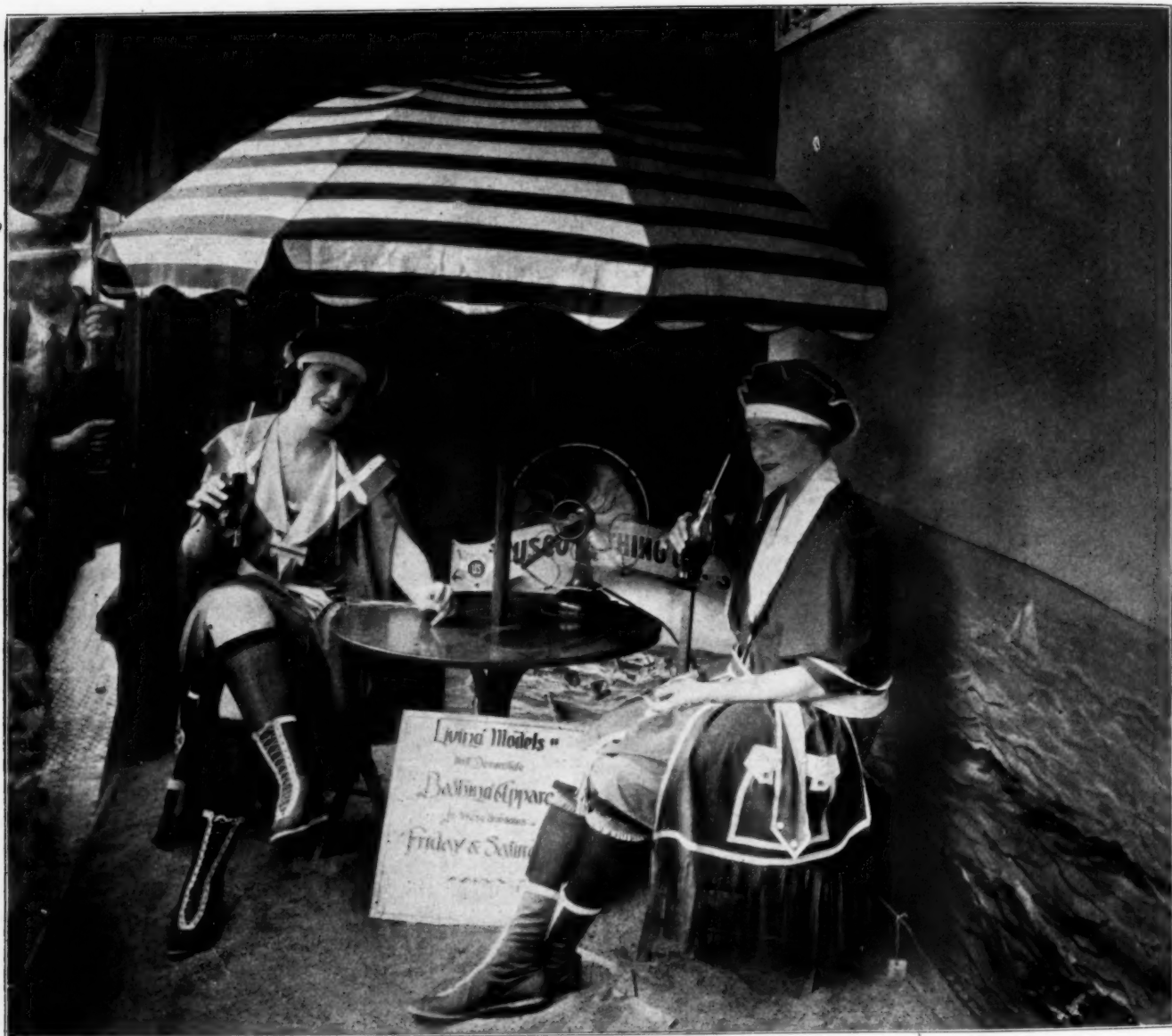
Company, 810-814 Walnut Street, Kansas City, Missouri.

This display was designed and directed by Otto J. Gress. It has the irresistible appeal of human interest intensified by feminine beauty.

suits and caps.

Thus in the course of the day, they exhibited practically all the various styles carried in stock by the Bunting Hardware Company.

Women of all ages, sizes, and degrees of beauty crowded into the



Window Exhibit of Bathing Suits and Supplies, Featuring Living Models. Designed and Directed by Otto J. Gress for the Bunting Hardware Company, 810-814 Walnut Street, Kansas City, Missouri.

would be powerful enough to keep its victim from wanting to go in swimming if he saw the window exhibit of bathing suits and supplies, advertised with living models in the window of the Bunting Hardware

One of the living models was a tall graceful brunette. The other girl was a petite blond.

They wore different bathing costumes; and frequently retired from the window to don other bathing

store to buy the suits and accessories demonstrated by the living models.

The customers never paused to debate with themselves whether or not they would look as attractive



as the models in the things which they bought.

So far as human records go, there isn't a case known in which even the homeliest of women does not believe that she is good-looking enough to wear what other women wear.

Hence, it was easy to sell the bathing suits and supplies worn by the pretty girl models in the window.

The entire stock of these things was sold through this effective form of window advertising.

### *Irving S. Kemp Joins the Evansville Tool Works.*

After ten years of remarkable achievements as sales manager of Vaughan & Bushnell Manufacturing Company, Chicago, Illinois, Irving S. Kemp has resigned his position to become vice-president of



Irving S. Kemp.

the Evansville Tool Works, Evansville, Indiana.

Mr. Kemp's only reason for making the change is because of the opportunity to secure a substantial interest in the Evansville Tool Works.

Without a single exception, he carries with him the good will and esteem of all his associates.

They look upon his departure with keen regret for the loss of so able a sales manager and so true a friend.

Before assuming the position of

sales manager of Vaughan & Bushnell Manufacturing Company, Mr. Kemp was connected with D. F. Kemp, who represented leading hardware lines throughout the middle west territory a great many years.

He was thus fortunate in the beginning of his business career to have the opportunity of visiting all sections of the United States.

His first connection was with the Buffalo Forge Company, Buffalo, New York, and his work for them covered a wide range of territory from Maine to New Orleans.

Since that time he has had occasion to visit both large and small trade in all sections of the country.

The knowledge thus obtained helped him considerably in taking care of routine business through knowing in many instances the people with whom he was doing business.

As vice-president of the Evansville Tool Works, Mr. Kemp will give particular attention to the promotion of sales.

Inasmuch as the Evansville Tool Works manufactures a full line of broad axes, cleavers, adzes, bush hooks, hatchets, handled hammers, heavy sledges, anvil tools and tongs, Mr. Kemp will have the advantage of working with products with which he is thoroughly familiar.

### *The Wholesaler Is Necessary to Business.*

The American Wholesale Grocers' Association, in a bulletin to the trade gives arguments in support of the wholesale grocer as the most economic medium of food distribution from the manufacturer to the retailer.

The reasoning applies with equal force to the distribution of all classes of commodities.

The bulletin says:

"Historically from manufacturer-to-wholesaler-to-retailer is shown to be the best method to reach the consumer.

"Originally the wholesaler was largely an importer. Domestic goods, under a less complex and

less attractive civilization, were consumed largely near the place where grown or manufactured.

"The grower brought on market days his vegetables and live stock to the village market and disposed of them to consumers; the home craftsman or manufacturer delivered his products personally or disposed of them in the same market.

"This method was sufficient when needs were few and opportunities to supply such needs were limited.

"This method of direct-to-consumer was sufficient when only absolute needs were met and where comforts were few.

"When, however, commodities not grown or manufactured in the small home circle were needed, some agency had to act between the grower and manufacturer and the consumer.

"Most of such commodities not grown in the village community had to be imported.

"Thus the first man who bought, transported and stored for subsequent sale the goods demanded, was an importer.

"He did for the goods handled just what the wholesaler does now.

"This first wholesaler did not create a need for his services he met (and continues to meet) the demand for such services.

"As men's desires increased, there arose demands for many commodities and varieties of commodities which the home community could not supply.

"Some one had to learn what this demand was, where commodities existed to supply it and to perform the service of buying, transporting, storing and distributing such commodities.

"Neither the grower nor the manufacturer had the time nor the training to find the consumers who needed his products.

"The consumer could not go for his individual needs to the many growers and manufacturers who each had a small portion of such needs.

"So there is seen in economic histories that the importer-wholesaler becomes a factor in distribution.

Adam Smith states this idea: For the producer to sell by retail compelled him 'to keep one part of it in his granaries and stockyard for supplying the occasional demands of the market, and to employ the other in the cultivation of his land.'

"The consumer asked for the wholesaler. In the fourteenth century, Ashley Economic History and Theory, Volume 1, page 88, 'new wants began to be felt' and 'the mayor and aldermen at the suit and request of the folk' met the new want and 'consequently we find the municipal authorities confirming or creating companies \* \* \* of \* wholesale dealers such as grocers and drapers.'

"Had there been no need for him, the wholesaler would not have been evolved. That in economic evolution he came to be, proves his right to be; that he has survived for centuries, proves his fitness to continue.

"American business facilities were largely copied from those of England; and as soon as communities in America became something more than straggling villages, lacking in means of easy communication, the wholesaler arose.

"He came because there was a demand for him. He has continued during the magnificent development of this great country because that demand has continued.

"Demand produces supply. Agencies long existing prove a need therefor. That wholesalers now and have long existed shows that there is need for such agencies. Over 5,000 wholesale grocers exist in the United States at this time. If they performed no useful service they could not exist.

"Modern efforts to supplant the wholesaler by stock or membership selling schemes and by direct-to-consumer methods have failed. Economy and efficiency demand the wholesaler."

### ***Suggests Good Way to Advertise Paint.***

"If I were a dealer," said a professional ad-man the other day, "I

would run in my newspaper ads a list of people locally prominent, whose homes have been painted with the brand I sell, giving the date of last coat applied.

"The suggestion that you go and inspect an actual job would carry more weight than the customary ad: 'We Sell the Best Paint.'"

"I like the man, who when he offers to lend a hand, has something in it."—*Rudygram.*

### **Coming Conventions**

National Hardware Association Marlborough-Blenheim Hotel, Atlantic City, New Jersey, October 17, 18, 19, and 20, 1922. T. James Fernley, secretary-treasurer, 505 Arch Street, Philadelphia, Pennsylvania.

American Hardware Manufacturers' Association, Marlborough-Blenheim Hotel, Atlantic City, New Jersey, October 18, 19 and 20, 1922. F. D. Mitchell, secretary-treasurer, 1819 Broadway, New York City.

Western Implement, Vehicle and Hardware Association, Kansas City, Missouri, January 16, 17, 18 and 19, 1923. H. J. Hodge, Secretary, Abilene, Kansas.

Texas Hardware and Implement Association, Dallas, Texas, January 23, 24 and 25, 1923. A. M. Cox, Secretary, 823 Dallas County Bank Building, Dallas, Texas.

West Virginia Hardware Association Convention and Exhibition, Huntington, West Virginia, January 30 and 31, and February 1, 1923. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Indiana Retail Hardware Association Convention and Exhibition, Indianapolis, Indiana, January 30 and February 1 and 2, 1923. G. F. Sheely, Secretary, Argos, Indiana.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 6, 7, 8, 9, 1923. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Wisconsin Retail Hardware Association, Milwaukee Auditorium, Milwaukee, Wisconsin, February 7, 8 and 9, 1923. P. J. Jacobs, Secretary-Treasurer, Stevens Point, Wisconsin.

Pennsylvania and Atlantic Seaboard Hardware Association Convention and Exhibition, Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14, 15 and 16, 1923. Sharon E. Jones, Secretary, 1314 Fulton Building, Pittsburgh, Pennsylvania.

Ohio Hardware Association Convention and Exhibition, Cleveland, Ohio, February 13, 14, 15 and 16, 1923. Exhibition in the new Municipal Hall. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Illinois Retail Hardware Association Convention and Exhibition, Hotel Sherman, Chicago, Illinois, February 13, 14

and 15, 1923. L. D. Nish, Secretary-Treasurer, Elgin, Illinois.

Iowa Retail Hardware Association Convention and Exhibition, Des Moines, Iowa, February 13, 14, 15 and 16, 1923. A. R. Sale, Secretary, Mason City, Iowa.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 21, 22 and 23, 1923. George A. Fiel, Secretary, 10 High Street, Boston, Massachusetts.

New York State Retail Hardware Association Convention and Exposition, Rochester, New York, February 20, 21, 22 and 23, 1923. Headquarters, Powers Hotel. Sessions and Exposition at Exposition Park. John B. Foley, Secretary, City Bank Building, Syracuse, New York.

### **Retail Hardware Doings**

#### **Indiana.**

Charley J. M. Lieber has disposed of his interest in the Lieber Hardware Company at Hartford to his son, John A. Lieber, and his son-in-law, Ralph A. Hayden. The business will be continued under the firm name of Hayden-Lieber Company.

The Powell-Wolfe Company has leased room in the Hawkins Building, Portland, and will carry a complete line of hardware in stock.

#### **Indiana.**

John A. Ziegelbauer of New Albany has sold his hardware store at 603 Vincennes street to John M. Renn of East Eighth and Oak streets.

#### **Iowa.**

Hudson and Son of Centerville have gone into the hardware and implement business again.

The Tenold hardware business of Northwood has been sold to Henry T. Gabriel.

A deal has been completed whereby C. B. Holdridge sold his hardware stock in Whittemore to Raymond Oliver.

C. W. Arnold of Washington township, Creston, traded his 120-acre farm for the Harvey Schantel hardware stock in Arispe.

#### **Michigan.**

Henry Boehm of Petoskey, one of the managers of the McCabe-Boehm hardware store, sold his interest in the company to George W. McCabe.

#### **Minnesota.**

The Piotrauki Hardware store at Delft recently was totally destroyed by fire. The building and fixtures are a complete loss.

#### **Missouri.**

Rock Port has a new business firm, which will operate under the name of the McBeath-Savage Hardware Company. The owners of the business are Fred D. McBeath and Poole Savage.

#### **Ohio.**

The Gleckler Brothers Hardware Company of Youngstown has been incorporated with a capital of \$20,000 to operate a hardware, implement and general farmers' supply business.

#### **Wisconsin.**

After fifty years in the hardware business at Burlington, C. D. Wagner, Sr., sold his interest to his son, who in turn sold an interest to Edward Ball.



# Study and Interpretation of Advertisements.

You Can Make Your Advertisements More Gainful by Avoiding the Faults and Profiting by the Good Qualities of Others.

Most of the advertisements of fishing tackle which one sees nowadays are well written and illustrated.

But they put all the stress on quality and service to the exclusion of price.

Fishing might be described as the exercise of an inalienable right.

is almost the first consideration in making purchases.

Even millionaires are known to be just as keen on price as they are on quality.

Of course, there are plenty of people who never ask the price when the quality suits them.

But they do not constitute the

rods.

These prices are sufficient to suggest that the fisherman of small means can get good tackle without having to spend a week's wages in the purchase.

\* \* \*

As it appeared in the *Ypsilanti Press*, Ypsilanti, Michigan, the advertisement of the Shaefer Hardware Company measured 5¼ by 6 inches.

In the accompanying reproduction on a reduced scale, the arrangement of the type and the generous

## FISHING TACKLE

THE KIND THAT'S FIT FOR FISHING.

If you want tackle that lands the "big ones," it will pay you to visit our tackle department.

Jointed Cane Poles, 35¢ up.

Steel Casting Rods, \$1.90 up.

Ask to see the newest in artificial bait—Flies, Minnows, Spinners, Foss Pork

Rind Bait, Dowagiacs, Crab Wigglers, etc.

And a wonderful assortment of Hooks, Corks, Lines, Reels, Minnow Buckets and Seines.

Don't forget the Stubby Rod and Reel.

## HABERMAN HARDWARE Co.

Marion's Foremost Hardware Store.

QUALITY

SERVICE

*"Bristol"*  
Steel Fishing Rods



### Boydell Bro.'s Prepared Paint \$3.50 per gal.

This is the paint that covers the most square feet to the gallon and stays on the longest

We still have a complete stock of Gilbert & Bennett's Pearl Wire Cloth

If you want the best, see this cloth.

Let us repair your Screen Doors and Windows

Mead Bicycles at Less Than Factory Prices

CASH SPECIAL

Carter's Pure White Lead, \$11.50 per 100 lbs.

The Shaefer Hardware Co.

The Winchester Stores—We Deliver  
Stores at 124 Mich. Ave. and 23 N. Huron Phones 40-25

allowance of white space are quite apparent.

Prepared paint at \$3.50 a gallon is moderately priced.

However, the advertisement would be more convincing if greater care were taken to avoid the superlatives which occur in the lines which claim that the paint mentioned in the advertisement "covers the most square feet to the gallon and stays on the longest."

Always it is better—not only from the point of view of truth but from the angle of effective publicity—to be sparing of strong adjectives.

It would be much better to state the average number of square feet to the gallon covered by the paint in question than to assert that it covers the most square feet to the gallon.

Furthermore, there would be a distinct advantage in mentioning the number of months or years that this paint lasts without renewal.

Wherefore, all the hardware dealer's customers are potential buyers of fishing tackle.

Some of the customers—whose nickels and dimes help make the sum total of the dealer's income—can not afford to pay ten or twenty dollars for steel or bamboo fishing rods.

They would buy fishing rods more moderately priced, if they knew that their dealer had them in stock.

To people of small income, price

majority of the store's customers.

It is because of these facts that the advertisement of the Haberman Hardware Company, reproduced herewith from the *Marion Star*, Marion, Ohio, deserves special notice.

Quality, usefulness, and service are the dominant notes of this advertisement.

Reasonableness of price, however, is impressed upon the reader by specific price quotations of jointed cane poles and steel casting



# Comparative Tests at the Kansas State Agricultural College Disclose Facts about Automatic Ventilators.

*Among Other Things, the Results Indicate That a Wide Storm Band Materially Increases the Effectiveness of the Ventilator.*

COMPARATIVE tests of automatic ventilators have been made by J. P. Calderwood, Professor of Mechanical Engineering, the Kansas State Agricultural College, Manhattan, Kansas, in conjunction with A. J. Mack, Associated Professor of Mechanical Engineering, and C. J. Bradley, Instructor in Mechanical Engineering of the same college.

The results of the tests are published in the Journal of the American Society of Heating and Ventilating Engineers, as follows:

Because of the lack of authentic data upon the effectiveness of different types of automatic ventilators, when subjected to varying conditions, the tests, described in this paper, were conducted in the Engineering Experiment Station of the Kansas State Agricultural College, to determine the efficiency of many of the various styles.

A preliminary series of tests upon three different types of automatic ventilators were carried on at the Kansas State Agricultural College during 1919 and 1920.

The results of this investigation proved so interesting that a decision was made to continue the work upon a much broader scale and to include as many of the commercial ventilators as possible.

Consequently the laboratory equipment was enlarged and twenty-two representative ventilators were secured through the courtesy of the various manufacturers.

## Types of Ventilators.

In general, an automatic ventilator is simply a protecting device, which is placed over a hole in the roof of the building or inclosure to be ventilated, to prevent the entrance of rain or snow.

Their use for the removal of foul gases from inclosures is quite com-

mon so that further description is unnecessary.

Their chief advantage over the mechanical means of ventilation consists in their providing ventilation without the use of mechanical power.

Such a ventilator, in order to be effective in the production of ventilation, should not only be effective in preventing the entrance of snow or rain, but should also provide for the free exit of foul gases when no wind is blowing and should not be affected by down drafts when winds prevail.

This fact gives rise to various types, the main feature in their several designs being to utilize the wind to better advantage in the production of draft.

Commercial ventilators may, consequently, be divided into four general classes dependent upon the means utilized in producing the additional draft.

They are the plain stationary, the siphoning stationary, the plain rotary, and the rotary siphoning types.

The plain stationary type of automatic ventilator makes no special provision for utilizing the wind velocity in producing additional draft.

This type consists simply of a cap over the ventilator pipe which prevents the direct entrance of rain or snow and is made storm proof by a circular cowl or hood.

The principle of operation of stationary siphoning type is based upon the breaking up of the wind currents and directing them in such a manner as to create a decreased pressure in the upper portion of the ventilator.

Ventilation is thus secured by an ejector action.

When no wind is blowing, the

ventilation resulting is that due to natural circulation of the air.

When winds prevail the siphoning action is established and additional ventilation results.

The higher the velocity of the wind, the greater the exhausting power of the ventilator.

The plain rotary type consists of simply an elbow or its equivalent which is supported upon a vertical shaft.

The position of the elbow is regulated upon the principle of the weathervane so that the opening from the ventilator always points away from the direction of the wind.

This ventilator makes use of the slight vacuum produced by the wind in the production of additional draft.

The turbine ventilator was classed in this investigation as of the rotary siphoning type in that its operation was difficult to classify and that its effectiveness brought it within the rotary siphoning type.

It is illustrative of the many different ideas which have been incorporated in ventilator construction.

The rotary siphoning type has, in addition to the principle embodied in the plain rotary type, a feature similar to that used in the stationary siphoning ventilators.

The air is directed by flutes or vanes so that an ejector action is established, thereby increasing the velocity through the ventilator.

In some cases, the ejector is placed within the ventilator, while in others it surrounds the ventilator.

## Method of Test.

In establishing a method of procedure in conducting the tests, it was conceded that there were many factors which would influence the practical performance of a venti-

lator and which should be included if an exhaustive test were to be conducted, but difficulties would arise if any attempts were made to include these in the laboratory tests.

In dealing in a practical way with effectiveness of a ventilator, it is necessary to take into account the openness of the structure to be ventilated, as well as the action of the wind.

When wind is arrested by an obstruction, such as a building, a pressure is developed which forces air through possible openings with the result that the air inside the building is forced outward through no action of the ventilator other than the opening it provides.

Furthermore, temperature differences exist between the inside and outside of buildings ventilated and this likewise will increase or decrease the effectiveness of a ventilator in practical use, depending upon the degree of temperature difference.

In conducting the tests in this investigation, it was finally decided that the performance of the wind in inducing a current of air through the ventilator was the important factor.

Also, it was thought desirable to secure data upon the advantages of the various types of ventilators and to ascertain, if possible, what principles of design should be incorporated to secure the most efficient ventilator.

The investigation, consequently, was limited to these phases of the subject.

#### Test Equipment.

In order to conduct the tests and to approximate actual wind conditions, a wind tunnel 3 feet square and 16 feet long was first constructed.

In one end of the tunnel a variable speed fan was placed which was capable of producing wind velocities up to 15 miles per hour.

About  $3\frac{1}{2}$  feet from the other end of the tunnel a 10 inch pipe, which protruded about 2 inches above the tunnel floor, was inserted to receive the ventilator.

The wind tunnel with its fan was

placed in the mechanical engineering laboratory, the volume of which was large enough to eliminate all perceptible drafts caused by the fan.

The temperatures of the air in the tunnel and that in the room were also equal so that all effects from natural ventilation were removed.

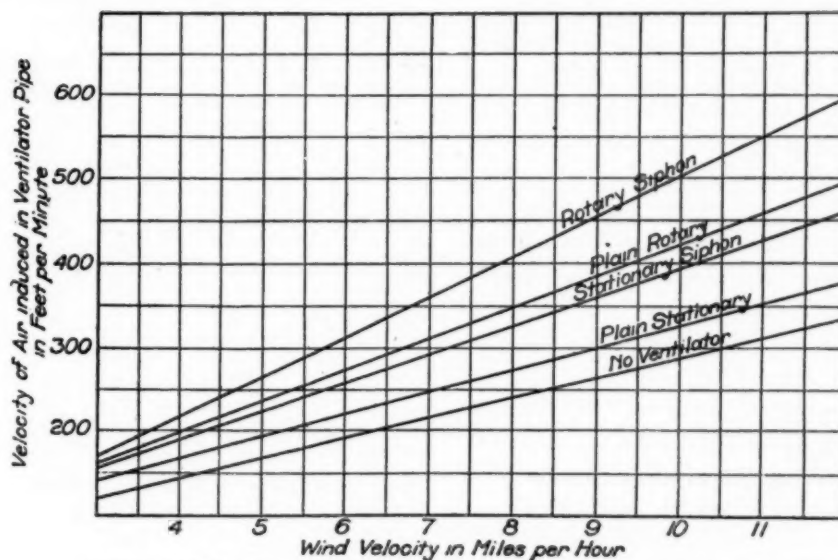
Honeycombed screens were placed within the tunnel to produce parallel currents of air and to create a more uniform velocity over the tunnel section.

high pressure near the ventilator which tended to force air down through the ventilator rather than induce a current up through it.

Readings of the wind velocities in the tunnel and of the air induced through the ventilator were taken by means of an anemometer.

The readings of the velocity of air in the tunnel were taken at various sections of the tunnel and the results averaged.

The velocity of the air induced through the ventilator was measured by inserting the anemometer



THE AVERAGE EFFECTIVENESS OF THE FOUR TYPES OF VENTILATORS TESTED

All the ventilators tested were of the same commercial size.

The diameter at the base of the ventilator was 10 inches.

This dimension was selected as being fairly representative of the ventilators used in practice and this size made possible the investigation without necessitating a large tunnel.

It was assumed that the manufacturers of ventilators proportioned their ventilators according to their size and that a 10-inch ventilator would be proportional to other sizes.

In performing the tests, a ventilator was placed over the pipe in the tunnel and the speed of the fan regulated to produce the desired wind velocity.

The air from the fan was forced through the tunnel toward the ventilator, thus creating a region of

in the short vertical pipe underneath the tunnel floor.

Data was also secured of the air induced through the ventilator pipe when no ventilator was inserted in the tunnel.

The results secured in this latter case are referred to and recorded as *No Ventilator*.

#### Conclusion.

Before attempting to draw any conclusion from these results, it may be well to call attention to one or two important facts.

1. The test apparatus while designed to reproduce actual wind conditions approaches this only approximately.

As was mentioned before, in an actual installation, the wind has its progress arrested by the building.

A portion of this air enters the building through any crevices.

This theoretically increases the



pressure within the enclosure and materially increase the velocity of the air passing through the ventilator.

Thus, it would seem that the results secured in this investigation were only approximations of actual installations or would be applicable only to exceedingly tight or well built buildings.

To compare the results with actual installations, a 10 inch ventilator pipe was inserted in a small outbuilding.

No heat was supplied to the building during the tests and readings of the wind velocity and the induced velocity through the ventilator were read when various types of ventilators were used.

The variable velocity of the wind made the readings rather erratic, but when the tests extended over several days, the average results checked fairly closely with those secured in the laboratory.

It was thus concluded that the laboratory results were fairly representative. They were at least conservative values of what should be expected in actual installations.

2. The results were secured on rather small ventilators.

Commercial ventilators as a rule are much larger than those used in this investigation and their proportion may be different from that of the 10 inch ventilator tested.

This may alter the aspect of the problem, although it is assumed to no serious extent.

3. The results as found in the investigation differed somewhat from those secured in tests of similar ventilators conducted in different laboratories.

This discrepancy is partly explained by the fact that different laboratory equipment will produce different results.

Any turns or extension to the pipe which is used for receiving the ventilator under test produces friction that lowers the test results.

The size of the tunnel likewise plays an important part, a small tunnel producing different results from those of a large one.

With a tunnel 3 feet square as

TABLE 1. RESULTS OF TESTS SHOWING THE VELOCITY IN FEET PER MINUTE INDUCED THROUGH SEVEN DIFFERENT PLAIN STATIONARY VENTILATORS.

Velocity of wind in miles per hour	No. Ventilator	Velocity induced through ventilator, feet per minute						
		Ventilator Designation						
4	145	185	266	148	185	142	133	160
8	241	287	355	257	287	238	242	267
12	337	390	446	366	390	334	350	375

TABLE 2. RESULTS OF TESTS SHOWING THE VELOCITY IN FEET PER MINUTE INDUCED THROUGH SIX STATIONARY SIPHONING VENTILATORS.

Velocity of wind in miles per hour	No. Ventilator	Velocity induced through ventilator, feet per minute					
		Ventilator Designation					
4	145	162	157	226	189	205	206
8	241	304	292	404	315	332	369
12	337	446	426	583	440	458	532

TABLE 3. RESULTS OF TESTS SHOWING THE VELOCITY IN FEET PER MINUTE INDUCED THROUGH FOUR PLAIN ROTARY VENTILATORS.

Velocity of wind in miles per hour	No. Ventilator	Velocity induced through ventilator, feet per minute			
		Ventilator Designation			
4	145	208	192	191	202
8	241	346	348	354	341
12	337	484	505	518	480

TABLE 4. RESULTS OF TESTS SHOWING THE VELOCITY IN FEET PER MINUTE INDUCED THROUGH FIVE ROTARY SIPHONING VENTILATORS.

Velocity of wind in miles per hour	No. Ventilator	Velocity induced through ventilator, feet per minute				
		Ventilator Designation				
4	145	257	192	222	217	204
8	241	479	370	387	410	393
12	337	702	548	553	606	582

TABLE 5. RESULTS OF TESTS SHOWING THE AVERAGE VELOCITY IN FEET PER MINUTE INDUCED THROUGH THE VARIOUS TYPES OF VENTILATORS.

Velocity of wind in miles per hour	No. Ventilator	Velocity induced through ventilator, feet per minute			
		Type of Ventilator			
4	145	Plain Stationary	Siphoning Stationary	Plain Rotary	Rotary Siphoning
8	241	168	191	198	218
12	337	273	326	348	408
		379	461	497	598

used in this investigation, some of the larger ventilators produced so much obstruction that only a comparatively small area remained for the flow of air between the ventilator and the sides of the tunnel.

One of the first important conclusions that may be readily drawn from these results is that a wide range of effectiveness is found in the ventilators of each type.

There were ventilators in each type that gave an extremely high ventilating effect, while others were comparatively poor.

The range was more pronounced in the plain stationary type.

Some of the plain stationary types did not give as good results as no ventilator.

Much of this could be overcome through more judicious design.

The free area through the ventilator openings should be of ample capacity and be as free from obstructions as possible.

The storm band, if used, should be of ample width to prevent the wind from entering the ventilator.

As judged from the results of the different types of ventilators tested, a slight gain is made by utilizing the wind to better advantage.

In the order of their effectiveness come the plain stationary, the stationary siphoning, the plain rotary and the rotary siphoning.

A comparison of the siphoning types of ventilators with those of the non-siphoning types show that some of the non-siphoning types are as effective as some of those employing the siphoning principle. This fact led to a special investi-



### **Graphic Comparison Shows Great Amount of Coal Used.**

The great electrical engineer and scientist, Charles P. Steinmetz, uses a graphic comparison to show what enormous quantities of coal are produced in the United States, as follows:

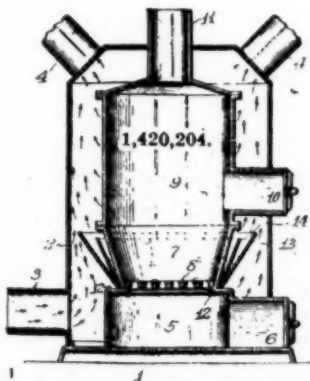
One of the great wonders of the world is the Chinese Wall, running across the country for hundreds of miles, by means of which China unsuccessfully tried to protect its northern frontier against invasion.

Using the coal produced in one year as building material, we could with it build a wall like the Chinese Wall, all around the United States, following the Canadian and Mexican frontiers, the Atlantic, Gulf of Pacific Coast; and with the chemical energy contained in the next year's coal production we could lift this entire wall into space, 200 miles high.

Or, with the coal produced in one year used as building material, we could build 400 pyramids, larger than the largest pyramid of Egypt.

### **Obtains Patent for Warm Air Furnace.**

Richard Marx, Detroit, Michigan, has secured United States patent rights under Number 1,420,204, for a warm air furnace described herewith:



In a warm air furnace having a fire box, and a cold air flue adapted to admit cold air to a furnace, inverted frusto-conical shaped deflectors, about the fire box, each supported by the fire box with the lower ends thereof adjoining and closed to cold air and adapted to provide

annular compartments having upper open ends adjacent the fire box and from which the cold air is excluded.

### **Gives Directions for Installing Pipeless Warm Air Heater.**

Clear and simple directions are given for installing pipeless warm air heater in the "Torrid Zone Manual of Warm Air Heating," published by the engineering department of the Lennox Furnace Company, Marshalltown, Iowa, as follows:

In locating furnace, try to equalize the return of the cold air from all parts of the house.

In two-story houses, the furnace usually sets forward of the center.

To equalize temperature in all rooms, the distance above doors should not exceed 24 inches.

It is not always essential, or even desirable to have each room to a maximum temperature, such as kitchen and bed rooms.

Avoid locating a register next to wall for the obvious reason that it cuts off the cold air from one side.

Do not locate in closet or closed hall.

A cased opening is the best location, as it equalizes temperature of what are usually the two main rooms, and avoids the rugs.

When register is located between the hall (in a two-story house) and living room, the tendency will be for the air to flow faster to the second floor and the register should be placed approximately one-third in hall and two-thirds in living room.

If necessary to place at end of house, under other conditions, the same plan should be followed in dividing up the space between cased openings.

When the stairway is enclosed, or the open stairway is without sufficient space for warm and cold air to pass each other without contact, a ceiling register not less than 18x24 inches should be placed in the ceiling for the second floor hall, over warm air register, to insure

positive and quick circulation to second floor.

If third floor is used a similar register and face should be placed directly over second floor register, the cold air in each case returning through the stairway.

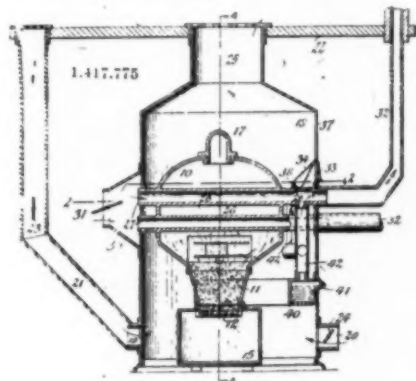
Never off set the warm and cold air pipe.

To equalize rooms having more than 24 inches between top of door and ceiling, use transoms or grills over door.

Air passages of front are partially obstructed by feed door and should be considered in locating furnace front.

### **Obtains Patent Rights for Warm Air Furnace.**

Under number 1,417,775, United States patent rights have been



granted to Dewey A. Scott, Buffalo, New York, for a warm air furnace described as follows:

A hot air furnace comprising a combustion chamber, an upright main air heating chamber enclosing said combustion chamber and having an air inlet and an air outlet, a supplemental air heating pipe extending horizontally through said combustion chamber, and having an air inlet and a main air outlet outside of said main air heating chamber and also having an auxiliary air outlet whereby said supplemental pipe may be placed in communication with said main air heating chamber, and a movable gate which in one position closes the main air outlet of said supplemental pipe and opens said auxiliary air outlet and in another position closes said auxiliary air outlet and opens said main outlet of the supplemental pipe.

gation which had for its object the determination of the effectiveness of the siphons.

In this part of the work, the siphons on the windward side of the ventilator were closed by wads of paper and invariably the effectiveness was not decreased.

A further study of the effectiveness of the stationary siphoning types was made to determine what factors in the design made those of one manufacturer better than another.

This study was decided upon because most of the ventilators in this classification were practically the same in general measurements.

It was found that the width of the storm band played an important part, the wider the band, the greater the effectiveness.

The results also seemed to show that the addition of the flutes for producing the siphoning acted as a secondary storm band and that those ventilators in which the angle of the flutes were small proved the most effective.

This later conclusion was explained by the fact that with ventilators whose flutes were steep, more difficulty was encountered by the air in entering the ventilator.

Consequently, less air entered that had to be exhausted and the exhausting power of the ventilator could be utilized in inducing air through the ventilator rather than removing air that had been introduced for siphoning.

The results of this investigation seem to indicate that the most effective action of the wind in inducing air through a ventilator is the vacuum produced in the wake of the wind.

The ventilators which showed marked effectiveness in these tests took advantage of this principle.

Those ventilators, which presented a large obstruction to the wind, other factors being the same, gave best results.

The factors which seem to be important in the design of a ventilator are as follows:

The area for the outgoing gases should be made ample; in the case

of siphoning ventilators the free area should be designed to care for the additional air used in siphoning; the storm band, if used, should be made at least wide enough to prevent entrance of outside air, any provision, whereby the vacuum created by the wind is increased or made more effective, will produce better results.

#### Effect of Storm Band.

In order to test the effect of the width of the storm band, an experimental ventilator of the plain stationary type was constructed.

The storm band was formed by two sheets of tin and made so that the width of the band above and below the ventilator opening could be varied.

The size of the tunnel did not permit of a larger storm band than 22 inches and the minimum width of band was 17½ inches.

The lower edge of the storm band was placed 4 inches below the ventilator opening, as this location gave the best results.

Table 6 gives the results of this test.

TABLE 6. RESULTS OF TESTS UPON AN EXPERIMENTAL VENTILATOR TO DETERMINE EFFECTIVE WIDTH OF STORM BAND.

Wind Velocity in miles per hour	Velocity induced through ventilator, feet per minute.			
	Width of Storm band in inches			
	17½	19	20	21
4	130	164	183	202
8	402	432	456	477
12	620	651	680	696

A comparison of these results indicates that a wide storm band materially increases the effectiveness of the ventilator and that a plain stationary ventilator so equipped is equal in effectiveness to some of those of the rotary siphoning type.

While these results may be in error because a ventilator with so great a band width produced so large an obstruction in the experimental tunnel, they do indicate the advisability of considering the storm band as an important part of the ventilator.

Many an uncivil young man manages to pass a civil service examination.

### Gives Reasons Why Warm Air Heater Dealer Should Study.

Evils and imperfections in commercial, as well as in social phases of life are most effectively overcome by education.

At the bottom of all improvement in our country must be the impulse of social consciousness.

A nation is made up of the units of its citizens, it is true.

But no nation can function except through a collection of groups of these units working together in a compact social organization.

It is a peculiarity of any living structure that group interests can be fostered only by promoting the general interests of the composite groups which constitute the organic structure.

The man who sells and installs a warm air furnace is not an isolated individual, nor is the transaction an isolated transaction.

On the contrary, it has relations in numerous directions with other industries, other individuals, the neighborhood, and the nation.

Therefore, the dealer and installer of warm air heaters actually has an obligation to his fellowmen through his craft.

That is to say, he owes it to his country to use honest workmanship and adequate values in the transaction.

From this flows clearly the necessity of education in matters pertaining to the warm air heater trade.

The higher the standard of ethics of craftsmanship, the better for all involved.

"The best way to overcome a dislike for a person is to get acquainted with him."—*Rdwygram*.

The clerk who can't imagine himself as owner of the store in which he works loses all the joy of work, and stands no chance of ever rising very high.

The retailer who handles unknown or unfavorably known products is handicapping his store both in immediate sales and in prestige in the community.

### Defines Names and Sizes of Various Coals.

Undoubtedly, it is a convenience to have a list of the names and sizes of various kinds of coal.

For the benefit of warm air heater dealers and installers, the following definitions are reproduced from the Proceedings of American Society of Mechanical Engineers:

The ordinary sizes and designations of "Domestic" hard coals are:

	Will pass through.	Will not pass through.
Names and Sizes.		
"Pea" . . . .	$\frac{3}{4}$ inch mesh	$\frac{1}{2}$ inch mesh
"Chestnut" or "Nut"	$1\frac{1}{4}$ inch mesh	$\frac{3}{4}$ inch mesh
"Stove" or "Range"	$1\frac{1}{4}$ inch mesh	$1\frac{1}{4}$ inch mesh
"Egg"—In the East.	$2\frac{1}{2}$ inch mesh	$1\frac{3}{4}$ inch mesh
"Large Egg"—Chicago.	4 inch mesh	$2\frac{3}{4}$ inch mesh
"Small Egg"—Chicago.	$2\frac{3}{4}$ inch mesh	2 inch mesh
"Broken" or "Grate"	4 inch mesh	$2\frac{1}{2}$ inch mesh

#### Bituminous or "Soft."

For "Domestic" soft coals there are no uniform names and sizes; but they are marketed in the various states under about these classes; "Screenings" usually smallest sizes.

"Duff" goes through  $\frac{1}{8}$  inch screen.

"Number 3 Nut" goes through  $1\frac{1}{4}$  inch screen, over  $\frac{3}{4}$  inch screen.

"Number 2 Nut" goes through 2 inch screen, over  $1\frac{1}{4}$  inch screen.

"Number 1 Domestic Nut" goes through 3 inch screen, over  $1\frac{1}{2}$  or 2 inch screen.

"Number 4 Washed" goes through  $\frac{3}{4}$  inch screen over  $\frac{1}{4}$  inch screen.

"No. 3 Washed Chestnut" goes through  $1\frac{1}{4}$  inch screen, over  $\frac{3}{4}$  inch screen.

"No. 2 Washed Stove" goes through 2 inch screen, over  $1\frac{1}{4}$  inch screen.

"Number 1 Washed Egg" goes through 3 inch screen, over 2 inch screen.

"Number 3 Roller Screened Nut" goes through  $1\frac{1}{2}$  inch screen, over 1 inch screen.

"Number 2 Roller Screened Nut" goes through 2 inch screen, over  $1\frac{1}{2}$  inch screen.

"Number 1 Roller Screened Nut" goes through  $3\frac{1}{2}$  inch screen, over 2 inch screen.

"Egg" goes through 6 inch screen, over 3 inch screen.

"Lump" or "Block" goes through 6 inch screen, or over.

"Run-of-Mine" in fine and large lumps.

*Pocahontas Smokeless:* Generally sized as: "Nut," "Egg," "Lump," and "Mine Run."

*Cannel Coal:* For fireplaces—"Hand Picked Lump;" for stoves: "Egg."

*Domestic By-Product Coke:* "Egg," 3 inch- $2\frac{1}{2}$  inch.

"Large Stove,"  $2\frac{1}{2}$  inch-2 inch.

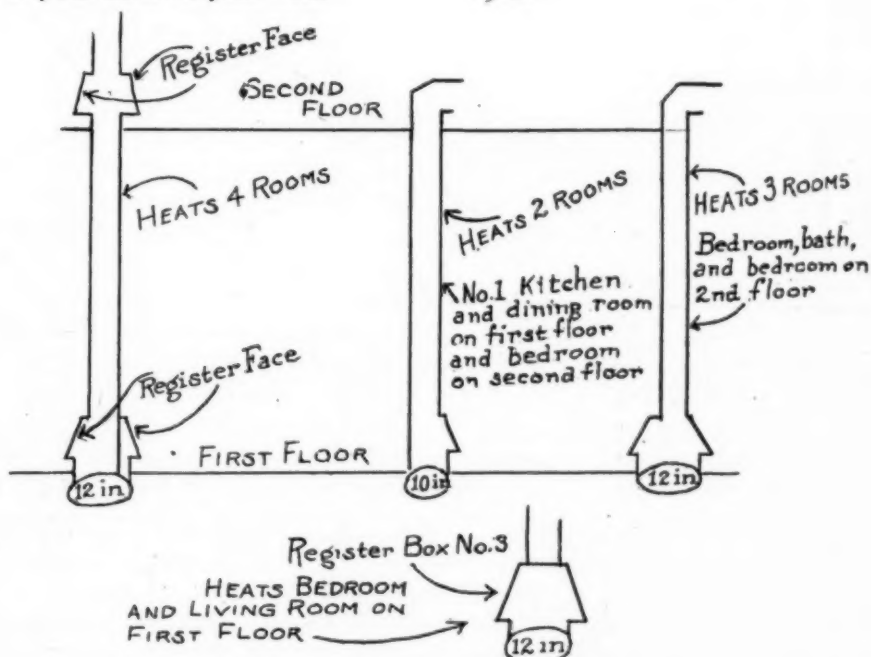
"Small Stove," 2 inch- $1\frac{1}{2}$  inch.

"Nut,"  $1\frac{1}{2}$  inch- $\frac{3}{4}$  inch. "Pea,"  $\frac{3}{4}$  inch- $\frac{1}{2}$  inch.

### Offers Solution of Old Subscriber's Problem.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

I am enclosing a sketch showing how I would solve the heating problem presented by "Old Subscriber" in your issue of June 10th.



Solution of Old Subscriber's Heating Problem.

I would put two cold air pipes on this warm air furnace.

Both cold air pipes should be of equal capacity, with flat nose connections where they go on the fur-

nace casing, not more than 12 inches high.

The sketch shows how the rooms are heated.

Yours truly,

JOSEPH HARMON.

West Duluth, Minnesota, August 7, 1922.

### Trade-Mark for Coal Furnaces Is Granted.

Under Number 159,724, United States patent office registration has been granted to Seattle Pipeless Furnace and Manufacturing Company, Seattle, Washington, for the trade-mark depicted herewith.



The particular description of goods to which it applies is coal furnaces.

Application for registration was filed February 23, 1922, and the Company claims the use of this trade-mark since September 18, 1920.

The greatest day in any man's life is when he truly begins to discover himself. One discovery leads to another, until he finds a depth of wealth in his own possibilities.



# Practical Helps and Patterns for the Tinsmith.

Aids to the Improvement of Craftsmanship and Business.  
News from Various Branches of the Sheet Metal Trade.

## PATTERNS FOR FORGE HOOD.

By O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri. Written especially for American Artisan and Hardware Record.

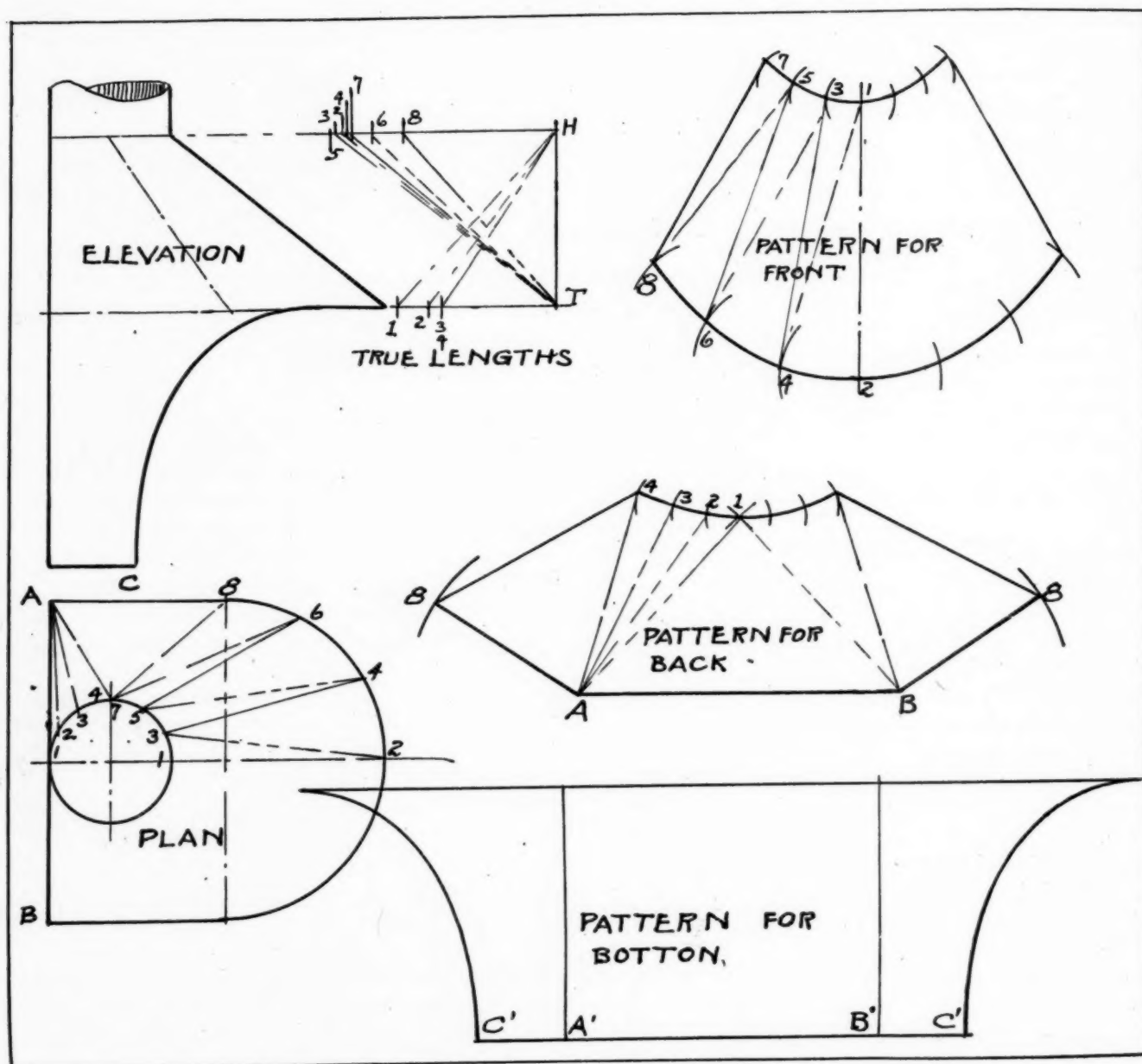
hood, treating the upper portion as a transition piece square at the back and forming a semi-circle at the front, then on the bottom and apron is attached, to give it the appearance of the real hood.

The main thing to lay out the

in the plan and describe the top base and the semi-circle.

Divide the circle in any number of equal parts and treat the semi-circle in a similar way.

In practice only half plan need be treated since both halves are alike.



Patterns for Forge Hood.

Forge hoods can be made in a great many different designs and methods.

Our drawing in this case shows a simple method of developing the

problem of this kind is the transition piece.

So first draw the elevation, giving it the proper rise, and the projection, and then locate the opening

Now draw lines from the various points A-1-2-3-4 and also 1-2; 2-3; 3-4; 4-5, etc., of the front.

Pick these lines from plan and set them in a diagram of true

lengths, letting H-T be the height of fitting.

Set the back spaces as T-1-2-3, etc., and set the front spaces as H-2-3-4-5, etc.

In this way no confusion will be met with by drawing lines to the corners.

To lay out the pattern for back we treat it the same way as any square to round, by drawing a line as A-B equal to that line in plan.

Then we pick the true length H-1 and using A and B as centers, we strike and cross arcs in point 1.

Next pick one of the spaces of the top base of plan as 1-2 and using point 1 as center, strike small arcs as at 2.

Then pick true length H-2 and, using A and B as centers, strike and cross arc in point 2.

Repeat this until point 4 is established, and then pick space A-8 from plan and using A and B as centers, strike arcs as at 8.

Then pick true length T-8 and using points 4 as center, cross arcs in point 8 as shown and that gives pattern for back with the seam line as 4-8.

To set out the pattern for front, we draw a line as 1-2 equal to T-2 in diagram and then pick the girth 2-4 and 1-3 from plan and strike the arcs 3 and 4 as shown.

Pick true length T-3 and T-4 and using point 2 in pattern as center, cross arcs in point 3.

Then use the new point 3 as center, cross arcs in point 4.

The writer observes that the dotted line has been placed in reverse through an oversight as they should really run from 2 to 3 instead of 1 to 4, and 4 to 5 instead of 3 to 6, etc.

Hence, the reader must not get confused with the lines reversed.

Next describe arcs 5 and 6 in pattern and then pick true lengths T-5 and T-6 from diagram and, using the new point 4 in pattern as center, cross arcs in point 5, and then use the new point 5 as center and cross arcs in point 6.

This enables repeating this process until points 7-8 are established.

Draw lines through all lines

where arcs cross and your pattern is finished.

In setting off the pattern for the lower apron, the width is picked from the plan as A-B and is set as A'-B'.

Then the side line A-C is set on and the curve is reproduced directly from elevation and that finishes the pattern.

Laps for seaming must be allowed extra, also for enclosing wire or rod on the edges.

### ***Finds Copper Still Good After 3,000 Years.***

The Bulletin of the Copper and Brass Research Association, New York City, publishes an account of copper more than 3,000 years old, which is still in perfect condition, as follows:

When the Chancellor and Steward of the Royal Palace, Mehenkwtetre ("Gift of the Sun"), flourished in the days of the XI dynasty, almost 4,000 years ago, he, like all provident Egyptians of his time, made during his lifetime ample preparations for his funeral.

For it was part of the Egyptian religious belief that what was buried with you helped to make you comfortable and prosperous in the next world.

Now Chancellor Mehenkwtetre was a very rich man, and the recent examination of his tomb revealed extensive preparations for a happy hereafter.

Besides granaries, servants, boats of commerce, houses and cattle, he had built for himself a model garden.

An interesting feature of this garden, as seen from the model portico of the Theban house, is a copper swimming pool.

This garden is unique in the annals of Egyptian antiquities. There is the high wall which shuts out the outside world.

Within, a little oblong pool lined with copper is surrounded with fruit trees, and facing it is a cool, deep porch with gaily painted columns.

In connection with this copper

pool, Mr. Ambrose Lansing, the archaeologist of the Metropolitan Museum of New York (who was one of the members of the Egyptian Expedition—1918-1920), said that the copper pool had not been filled with water, but that it was of moulded copper and he was quite sure that it would hold water.

He said they did not put water into the pool on account of the effect of dampness on the other parts of the model house and courtyard.

However, Mr. Lansing did conduct an experiment on a moulded bowl of thin copper, dating back to 1700 B. C.

He poured water into this and there was absolutely no leakage.

He then poured water into a vase-shaped copper vessel of perhaps the same age, which had been used as a cooking-utensil, as was shown by the fire marks of centuries ago clearly apparent on the bottom of the vessel.

Again in this instance there was not a trace of leakage—it held water perfectly.

Mr. Lansing said that he had never before tried this experiment on any of the ancient copper vessels that he had found.

Perhaps as far in the future as the ancient Egyptian days are gone, if we, too, may be permitted the liberty of assuming an H. G. Wellsian prophetic role, the Metropolitan Museum of the future will contain relics of our then bygone age.

Excavators exploring the site of what had been lower New York will perhaps come across the copper roof of some famous ancient church, long covered with the dust of time, but still intact.

Perhaps also some lucky individual will uncover the spire of the lofty Woolworth Building, discovering underneath the strata the copper capped tower, with its brass railings and the copper lamp once a beacon to vessels entering New York harbor through Sandy Hook.

Don't set up your own standard of right and wrong and expect other men and women to conform to it.

## Veteran Tinsmith Gives Some Helpful Hints to Sheet Metal Workers of the Present Day.

*D. C. Trester of Freeport, Illinois, Writes Brief Account of His Stake Holder, Square Shears, and Eave Trough Hanger.*

TO THE younger generation of sheet metal workers it is both interesting and instructive to read the following items from a veteran tinsmith who shows a progressive spirit at the age of 76 years:

TO AMERICAN ARTISAN AND HARDWARE RECORD:

I enclose a few items, which you can put into your magazine if you think they are worth mentioning.

I am now nearly 76 years old and have not worked for a number of years, but just the same I like to see what is going on.

Very truly yours,

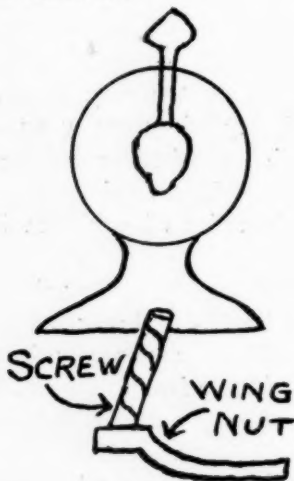
D. C. TRESTER.

Freeport, Illinois, August 7, 1922.

### Stake Holder.

I was the first one to make what is called a bench stake holder. The first one I made to use with standard.

I afterward, made it without standard something like the sketch shown herewith.



I also invented the Carew Wire Cutter, eight years before it was invented or patented.

I tried every blacksmith I could find, but they said they could not make it, so I gave it up.

I have an old German tinner's book published in 1853. It gives all of its patterns on separate leaves, which makes it quite handy.

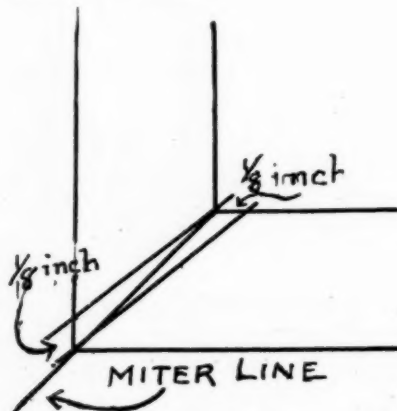
It is a fine book and gives many

things which are necessary now. Also it gives quite a good many kinds of patterns that are not published in any books of today.

It is more of a cornice book; in fact, gives more drawings for most anything. This book was given to me by a German just a few years ago, after I had quit the trade.

### Square Elbow.

I have taken tinner's magazines for over 50 years and I have never seen a correct way to make patterns. They always give the miter line which is not correct because by giving the miter line they make no allowance for seam, but by measuring one eighth inch back on small end and one eighth on throat you get the seam (that is for a small seam, make more of an allowance for larger seam) which will produce a perfect square elbow. The same will apply to any kind of elbow square to round.



I see in your 20th Century Sheet Metal worker, Osborn uses the level square to obtain a pan corner.

I gave it to you in 1889 and you published it in AMERICAN ARTISAN AND HARDWARE RECORD issue of December 9th of the same year.

### Square Shears.

So far as I can find out I was the first one to put shelves on square shears.

I also made gauges to cut out tinware, such as wash tubs, pails, pans or any flaring ware.

I only marked out and cut the bottom and top circle on circular shears, the balance on square shears, by use of gauges. Also cut out tin cup, coffee pot and all handles like them without marking from pattern by the use of these gauges.

### Soldering Overhead.

I would like to have some of the boys give their experience in soldering overhead or ceiling. I got into a corner once and I studied how to do it and make a good and strong joint that would hold just as well as if soldered on top.

### Strap Hinge.

I invented what is called Wells pot strap hinge ten years before it was patented.

In all of my inventions I did not have the money in those days to pay for patents.

### Eave Trough Hanger.

I made a wire eavetrough hanger different from any one else. The wire goes across top and strap from wire to roof.

It makes the neatest hanger of any. You can hardly see how trough is hung from ground.

I have put up many thousands of these and never knew of any trough being blown down.

### Issues Book on Special Sheet Metal Work.

The sheet metal contractor who is on the alert for new sources of income will find much to his advantage in the book on "Special Sheet Metal Work," just issued by the Canton Art Metal Company, Ohio.

This publication is profusely illustrated with products of the Company and shows a wide variety of articles, such as tote boxes, forge hoods, storage tanks, ventilators, steel filing devices, cornices, skylights, steel bins, steel shelving, safety guards, light stack work, steel sidewalls and ceilings, etc.

The designers, draughtsmen, and engineers of the Canton Art Metal Company are at the service of the sheet metal contractor in working out proper equipment to meet requirements of any sheet metal job.



### **Armco Books on Correspondence Are A Gold Mine for Dealers.**

You would have to dig much harder in a gold mine to get values than you will have to work to get benefits from the two books on correspondence which have been issued by The American Rolling Mill Company, Middletown, Ohio.

One of the books is entitled "Principles of Good Correspondence."

The other is called "The Mechanics of Correspondence."

The first mentioned book is of particular importance to the retailer and dealer.

It is a gold mine of suggestions which he can turn into coin of the realm.

While it deals with the written word in the form of correspondence, it sets forth principles of the use of words which are of immense value to the dealer in his business—particularly in the making up of advertisements and circular letters.

Some idea of the wealth of suggestions and inspirations contained in this book may be had from the following passages:

"If your letter influences the reader to do what you want him to do, and, at the same time, retains his good will, then, you have a 100 per cent letter. Careful inspection of letters that accomplish this end, shows conclusively that certain well-defined principles are followed out. What are they?

"1.—The subject matter is made interesting;

"2.—There is no monotonous recital of irrelevant detail;

"3.—The reader is made to see a vitalized picture of the product;

"4.—This mental picture creates a desire that induces positive, favorable action.

In other words, in your letter there must be:

"1.—A point of contact,

"2.—An element of conviction,

"3.—An element of persuasion,

"4.—A clincher.

"How does the successful correspondent, step by step, develop or

construct these different parts? He has but one stock in trade upon which to draw. And that is Language. Language determines the dress of the letter, its effectiveness, its punch. Language is effective with you:

"1.—Use interesting, picture-building nouns and adjectives, and lively verbs full of action;

"2.—Avoid an over-use of short, expressionless words; but do not select certain words just because they are long. Discriminate between short words that are unusually forceful and long words that are unusually weak. A judicious mixture of short words and long words gives a pleasing contrast;

"3.—Choose words familiar to the reader. The language of the farmer is different from the language of the engineer;

"4.—Never attempt to use words that are out of your reach. If you do you will strain for effect. Be natural;

"5.—Cultivate a critical attitude toward such grandiloquence as: Very best, finest, good, greatest, and superior.

"Words are the letter writer's stock in trade. With words he skilfully draws his pictures, presents facts that imply other facts. Simple words are the best to use, because they are more widely understood. 'Imply' is, generally speaking, a better word than 'connote.' For the same reason 'itinerary' is not so desirable as 'route.'

"Is' and 'are' are lively verbs. They are full of action. Some verbs are far stronger than others. Consider: 'Armco Ingot Iron *cuts* easily,' and Armco Ingot Iron Sheet Metal is so soft and pliable that the tinner's shears *snip* through the metal.'

"Adjectives are colorful words that intensify description. Pick adjectives with care. Notice the difference between: 'Armco Dredge Pipe is built to stand hard use,' and 'Standing up under the terrific pounding of rocks and the ceaseless stream of gravel-grit that grinds away at the metal, this dredge pipe continues to give service.'

"Every one who wishes to use language effectively should study the value of words. Weigh them carefully. Don't make the mistake of thinking the task an easy one. Read good advertising and you will find many illustrations of effective use of words.

"Get your reader safely past the first six words and his attention is yours,' is the way one successful business man expresses the importance of the opening sentence.

"The opening sentence stimulates or stuns the reader's interest. To turn attention to vital personal interest, a bad start must be avoided, and a direct connecting link must be found so that the reader feels a strong impulse to read on. This connecting link is his self-interest."

### **Trade-Mark Is Registered in Patent Office.**

The American Steel and Wire Company, Cleveland, Ohio, has secured United States Patent Office registration under Number 156,134, for the trade-mark depicted herewith.

The particular description of goods to which it applies is cold



drawn steel wire; round, oval, flat, and other shapes; plain stranded and ribbon twisted; uncoated; galvanized, varnished, tinned, coppered, liquor finished, and otherwise coated; cold-rolled flats for blanking, stamping, forming, and other varied purposes; cold drawn and rolled round, flat, and other shaped steel suitable for the man-

ufacture of springs of all grades from common upholstery to highest music and tempered classes; flat, round, and other shaped steel hoops for close and loose cooperage, such as casks, barrels, tubs, and similar receptacles; aeroplane bracing and trussing wires, hot-rolled rods of various shapes for cold drawing and rolling, and cold drawn and rolled screw stock.

Application for registration was filed December 1, 1921, and the Company claims the use of this trade-mark since October 1, 1899.

### ***Here Are Some Trade Development Opportunities for You.***

Sheet metal contractors who are seeking new opportunities for trade development will find many practical suggestions in the following partial list of products for which sheet metal is used.

This list was compiled by J. D. Knox, associate technical editor of *The Iron Trade Review* and published in that excellent journal.

#### **Blue Annealed Sheets.**

Baling presses, barrels, bread toasters, chutes, ensilage cutter, ovens, perforators, portable ovens, ranges, stoves, stove pipe, stove pipe angles, stove pipe elbows, stove pipe reducers, tanks, washers, wood stiffeners.

#### **Black Sheets.**

Addressograph machines, advertising specialties, agricultural implements, alkali drums, ash pans. Automobile: Axle housings, battery boxes, brake drums, dash, drip apron body, drip apron wings frames, hot air pipes, hub caps, lamps, mufflers, radiator casings, seat panels, side panels, wheel housing reinforcing; bag hardware, baker's pans, bedstead ends, bicycle mud guards, bicycle tubing, blower systems, bottle caps, boxes, car seats, car windows, carpet sweepers, cashier stands, caskets, clocks, clutch cones, coal buckets, coal chutes, coal shovels, concrete chutes, concrete mixers, conveyor buckets, cream separators, drain outlets, drain tools (high carbon), egg boxes, electric stoves, elevator casings, enamelware, expanded metal, fan blades, ferrotypes, flue stoppers furnace dampers, gas holders, gasoline stoves, gas stoves, gas wells, brake drums, brick pallets, buggy bow sockets, buttons, cans and drums, jar caps, kitchen cabinets, locomotive, air reservoirs, arches, bridges, capping, cylinder jackets, feed-water heaters, flooring headlight frames, jackets, sem-

aphore boxes, smoke jackets, smoke stacks, spouting, water tanks, lye cans, mechanical ties, metal ceilings, metal novelties, metal wheels, mufflers, music disks, oil guards, oil stoves, oil tanks, oil waste cans, parts, picture frames, powder kegs, printer's galleys, push button plates, radiators, refuse burners, grave vaults, harrow disks (high carbon), hoppers, house letter boxes, implements, roast pans, safety treads and steps, saws (high carbon) scalding vats, scoops (high carbon), scrapers, shipping boxes, shop pans, shovels (high carbon), show cards, signs, sinks, skillets, spades (high carbon), spectacle cases, spiral fire escapes, stacks, stamped ware, standpipes stiffener stock, storage tanks, stove boards, stove pans, stove pipe, switch boxes, tacks, tea trays, tinner's stoves, tool boxes, tote boxes, toys, transformer tanks, trunks, trunk hardware, umbrella rods.

#### **Galvanized Sheets.**

Arches, ash cans, automatic feeders, awnings, baker's ovens, barrels, baskets, bill boards, booths, boarders, bucket pumps, buckets, building columns, car linings, car roofing, casing collars, ceilings, cellars, chimneys, cisterns, clothes driers, cold air boots, columns, conductor pipe, corn cribs, cornices, corset patterns, cresting culverts, dairy supplies, dippers, hot air furnaces, hot water tanks, ice cans, ice cream cans, incubators, jails, lamp posts, laundry tray covers, laundry tubs, life boats, lighting standards, lunch houses, doors, door casing covers, dormer roofs, dormer windows, down spouts, eaves trough, elbows, electric signs, elevator buildings, end wall flashing, entrance hoods, expanded metal laths, feed hoppers, feed troughs, fence posts, fence sidings, fence slabs, finials, flashings, flexible metal hose, flumes, frames, friezes, furnace piping, garages, garage heaters, garbage cans, gas furnaces, gasoline cans, graneries, gutters, shutters, side walls, side wall flashing, sign boards, silos, skylights, snow shovels, spouting, storm cellars, sugar evaporators, syrup evaporators, tanks, toilet tanks, measures, molding, oil cans, pails, panels, playground devices, pole cross ties, rain water cutoffs, refrigerator drip pans, refrigerator linings, reservoirs, ridge rolls, roller doors, roof gutters, roofing, seed bins, sash, shaving exhaust systems, shingles, tubs, utensils, valleys, ventilating pipe, ventilators, V-ridge capping, wall ties, wash boilers, wash boards, wash tubs, washing machines, water heater tanks, water troughs, water wheels, weather boarding, wind mills, windows, window case covering, window frames.

#### **Fine Finished Sheets.**

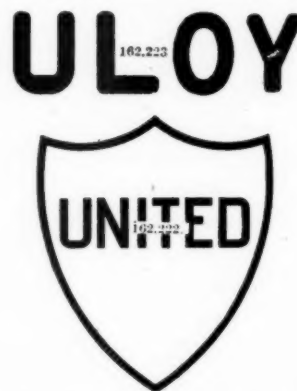
Automobiles: Aprons, bodies, hoods, radiators, seat blacks, cowls, doors, fenders,

splash guards, comptometers, enameling; bath tubs, bedsteads, bed tables, buggy seats, counter fronts, dial faces, dish washers, electric heaters, kitchen utensils, letter boxes, wagon panels, filing cabinets, furniture, japanning, lockers, nickel plating, bath room fixtures, casket trimmings, electric grills, electric toasters, fire extinguishers, lockers, lunch boxes, lunch counters, medicinal cabinets, metal caskets, oil lamp pots, pans, soda fountain sets, sterilizers, table tops, toilet tanks, furniture trimmings, lighting fixtures, novelties, picture frames, reflectors, signs, stove trimmings, thermometer armor, trays, trench mirrors, office equipment.

### ***Gets Trade-Mark Registered in Patent Office.***

Under Numbers 162,222 and 162,223, United Alloy Steel Corporation, New York, New York, and Canton, Ohio, has obtained United States Patent Office registration for the trade-marks depicted herewith.

The particular description of



goods to which they apply are steel, alloy steel, iron and steel bars, and sheet bars.

Application for registration was filed April 12, 1922, and the Company claims the use of these trade-marks since March 17, 1922, and October, 1921.

### ***Will Make Studies of Metal Corrosion.***

A study of film formations on metals under corrosion conditions will be made by the Bureau of Mines at Pittsburgh, Pennsylvania, as a part of the general program of the study of corrosion of metals by acid mine waters.

A study will be made of the formation of surface films on met-



als and alloys when exposed to corroding media, and an examination will be made of the effect of such films on corrosion inhibition.

R. J. Anderson, metallurgist, and James R. Adams, research fellow of the Carnegie Institute of Technology, have been detailed for the work.

### **Interest Is Not Profit.**

Speaking at a recent convention, Alfred Baruch, of New York City, consulting industrial engineer, corrected a common error with regard to what constitutes profit. Among other things, he said:

A man engages in business to earn a profit. If he should have to borrow all the money with which to go into business he would certainly have to pay interest before he could declare a profit. Therefore, it is necessary to charge interest into the cost whether the money is borrowed or not.

The only difference between the man who borrows money to run a business and the one who does not is that the latter has sufficient funds to operate his shop without going outside for capital.

The man who has borrowed money and fails for any length of time to earn at least the interest on the investment he will soon be declared bankrupt.

A man who puts his own money into the business will be allowed to stay on even though the business is insolvent.

Suppose, however, that the man who invested his own money repeatedly shows a loss until he has used up the larger portion of his operating capital; then he will have to borrow money in order to carry on.

Should he charge the interest on the borrowed money to cost why not charge interest on his own money?

It must be taken into account at some point to show what the return of the investment is equal to the current rate of interest or not.

If it is not, then it would pay the investor to take his money out of the business and put it in interest bearing bonds.

## Notes and Queries

### **Double Seaming Tongs.**

From E. J. Huddleston, Fountain City, Indiana.

Can you inform me who manufactures double seaming tongs.

Ans.—Peck, Stow and Wilcox Company, Southington, Connecticut, and Niagara Machine and Tool Works, Buffalo, New York.

### **Repairs for "Kenwood" Sewing Machine.**

From Louis I. Drackert, Tipton, Missouri.

Where can I secure repairs for the "Kenwood" sewing machine?

Ans.—From Foley and Williams Manufacturing and Supply Company, 19 West Jackson Boulevard, Chicago, Illinois.

### **"National" Water Power Washing Machine.**

From James A. Black Hardware Company, 3200 East 92nd Street, South Chicago, Illinois.

Will you kindly let me know who makes the "National" water power washing machine?

Ans.—National Motor Company, Springfield, Ohio.

### **Address of Kinnear and Gager Manufacturing Company.**

From Neosho Plumbing, Heating and Manufacturing Company, Neosho, Missouri.

Please advise us where the Kinnear and Gager Manufacturing Company, makers of steel ceilings, are located.

Ans.—Columbus, Ohio.

### **Oil Burners for Furnaces and Stoves.**

From George V. Jayne, 131 North Reed Street, Easton, Pennsylvania.

Kindly advise me who manufactures oil burners for stoves and furnaces; also who manufactures the Gurney Steam and Hot Water Boilers.

Ans.—The Standard Foundry and Manufacturing Company, 204 Scarritt Building, Kansas City, Missouri; Breeding Heat and Power Corporation, 311 Vine Street, Cincinnati, Ohio; Jarvies Gas and Oil Burner Company, 4022 Bellevue, Kansas City, Missouri; McEwen Furnace Company, Dept. 103, 15th and Brooklyn, Kansas City, Missouri. The Gurney Steam and Hot Water Boilers are manufactured by the Gurney Heater Man-

ufacturing Company, Boston Massachusetts.

### **Address of United States Register Company.**

From Mt. Vernon Furnace and Manufacturing Company, Mt. Vernon, Illinois.

Kindly furnish us with the address of the United States Register Company.

Ans.—United States Register Company, Battle Creek, Michigan.

### **Waterman Waterbury Furnace.**

From Schoolcraft Sheet Metal Works, Niles, Michigan.

Kindly advise us who makes the Waterman Waterbury Furnace.

Ans.—The Waterman Waterbury Furnace Company, 1121 Jackson, N. E., Minneapolis, Minnesota.

### **Agency for Coal Oil and Kerosene Oil Burners.**

From Mr. W. D. Shuck, Williamsville, Illinois.

I would like to take on an agency for a guaranteed and practical coal oil and kerosene oil burner for furnaces and stoves. Kindly advise me who manufactures these.

Ans.—The Standard Foundry and Manufacturing Company, 204 Scarritt Building, Kansas City, Missouri; Breeding Heat and Power Corporation, 311 Vine Street, Cincinnati, Ohio; Jarvies Gas & Oil Burner Company, 4022 Bellevue, Kansas City, Missouri; McEwen Furnace Company, Dept. 103, 15th and Brooklyn, Kansas City, Missouri.

### **Address of Rathbone, Sard and Company.**

From Smith and Thompson, Birch Run, Michigan.

Kindly give us the address of Rathbone, Sard and Company.

Ans.—Rathbone, Sard and Company, Aurora, Illinois.

### **Address of Young Manufacturing Company.**

From W. R. Shaw, 695 East Street, Jacksonville, Illinois.

Kindly give me the address of the Young Manufacturing Company.

Ans.—Young Manufacturing Company, Bellevue, Iowa.

### **"Dickinson" Cast Iron Ventilators.**

From Perersons & Young, El Paso, Texas.

Kindly advise us who makes the Dickinson Cast Iron Ventilators.

Ans.—Paul Dickinson, 3346 South Artesian Avenue, Chicago, Illinois.



# Review of Conditions in the Metal Markets.

## General Situation in the Steel Industry. Report of Prices and Tendencies in Sheet Metals, Pig Iron, etc.

### BUYERS OF COPPER ARE CAUTIOUS.

Buying of electrolytic by domestic consumers is moderate and mainly for September and October shipment.

The past week it is estimated that at least 10,000,000 pounds were taken for domestic shipment, and probably an equal amount for export.

A better demand has developed since the first of the month for rolled and drawn copper.

A number of small sales of brass tubing and copper sheets were made to ship builders.

So far as this country is concerned, most of this business is for repair work and some fair orders have been taken for shipment to South American shipyards.

Thus far the famine in fuel and rail congestion has not seriously affected the copper industry either in the west or in manufacturing plants in the east.

A conservative disposition is evident, however, which is reflected in cautious buying although an optimistic feeling prevails in regard to the future.

Statistically the industry is in better position than at any time since the end of the war. In fact, domestic consumption is 30 per cent larger than in the most active times preceding the war.

The ability of American consumers to dispose of 80,000,000 pounds of copper a month is regarded as the best evidence possible that the industry has fully recovered from the depression through which it passed by reason of enormous supplies following war activity when domestic consumption ran as high as 130,000,000 pounds a month.

Prior to the war domestic consumption did not average over 60,000,000 to 65,000,000 pounds a month.

More finished copper and brass is

also being used in building construction, especially in the east.

Wire drawers and brass mills have recently made some purchases of unwrought copper for September shipment.

Most of the purchases are being made to cover contracts for finished products already in hand.

There is small disposition to anticipate future requirements.

### Tin.

The supply of 99 per cent tin for prompt and August deliveries is still very scarce and the few lots that are offered are held at the same price as Banca.

Partly for the reason that they are impressed by the strength of the foreign market and partly because their interests lie in the direction of higher prices, domestic dealers are not free sellers this week.

They prefer not to sell unless they can replace with the futures.

The general feeling in London is that the market has been taken in hand by prominent operators, probably working in connection with interests on our side of the Atlantic, with the object of getting it on to a higher basis.

As deliveries in the United States have recently more than offset the supplies coming out, it looks as if the present moment were a favorable one to get the market out of the rut in which it had languished for so long.

Obviously, however, the success of the attempt will rest on the continuation of good deliveries in America, and on the determination of the Federal Malay States and Dutch governments to maintain their "holding up" policy so far as tin in their possession is concerned.

### Lead.

Lead prices gained  $2\frac{1}{2}$  points Tuesday, August 8th, the East St. Louis quotation being  $5.52\frac{1}{2}$  cents,

with many evidences of strength of the market.

There is but little lead available for spot sales, the bulk of that in the hands of producers being devoted to the filling of old contracts.

A buying movement in lead, which has included large inquiries and purchases well diversified among large and small consumers in all the principal consuming lines, has brought about advancing prices.

It is thought that reserve stocks will have to be drawn on further during the coming month as on the whole the sales are in excess of present scale of production.

### Solder.

Chicago warehouse prices on bar solder are as follows: Warranted 50-50, per 100 pounds, \$22.25; Commercial 45-55, per 100 pounds, \$20.75; and Plumbers' 40-60, per 100 pounds, \$19.50.

### Zinc.

In spite of the railroad strike and other untoward conditions the price for zinc blend ores held firmly to \$36 to \$37.50 for standard grades.

At these prices, however, there were but 5,200 tons purchased which is far from being the normal amount.

The whole situation is growing more difficult in that the railroads are finding difficulty in moving cars. It is difficult to get empties as well as keep the loaded one moving along and this is causing buyers to restrict their purchases in accordance with what number of cars are available.

Zinc prices advanced steadily, gaining in all about  $\frac{1}{2}$  cent a pound the past two weeks. Inability of smelters to increase production, due to present coal and rail troubles, against continued heavy consumption by galvanizers, brass mills and other consumers, have caused a further decline in stocks, so that offer-

ings of metal have been extremely scarce.

Speculators have been trying to accumulate supplies.

### **Sheets.**

Sheet production has been decreasing for several weeks and this continued decrease is now telling on supplies.

Consumption of sheets has decreased somewhat, but appearances are that the coal situation has affected the production of sheets much more than the consumption.

As sheets have not been plentiful at any time for months the change in the alignment naturally makes sheets scarce.

Consumers of sheets are showing little disposition to go out and pay fancy premiums to secure deliveries, as they did so enthusiastically a couple years ago.

There is some buying at premiums, but not much in point of tonnage.

The number of sellers is greatly restricted as the average mill is oversold already.

The automobile trade is most affected by the situation, being decidedly short of sheets.

It may find itself just as short of coal, however.

### **Tin Plate.**

Inquiries for tin plate for early shipment are going the rounds of the mills, it being difficult to find any seller in position to take on business for early shipment, say within the next three or four weeks.

The mills are sold up fully, at their present operating rates, to various dates from September 15th to October 1st or even a trifle later.

The market is very firm on the basis of \$4.75, Pittsburgh.

No question of premium is involved, it being merely a matter of whether or not the mill can arrange the delivery.

For fourth quarter there is practically no market.

There are requirements for the period, but the buyers do not feel disposed to act at the present time.

### **Old Metals.**

Wholesale quotations in the Chicago district which should be considered as nominal are as follows: Old steel axles, \$15.50 to \$16.00; old iron axles, \$21.50 to \$22.00; steel springs, \$15.50 to \$16.00; No. 1 wrought iron, \$13.00 to \$13.50; No. 1 cast, \$15.50 to \$16.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 8½ cents; light brass, 4½ cents; lead, 4¼

cents; zinc, 2½ cents; and cast aluminum, 12 cents.

### **Pig Iron.**

All present inquiries for pig iron are put out because of actual and immediate needs, as the trade generally believes that prices will be much lower when the strikes are over. This is also indicated by the fact that quotations made by furnace operators for fourth quarter are \$1 less than for immediate shipment.

## **Steel Prices Are Unchanged, but Heavier Premiums Are Asked for Prompt Delivery.**

*A Further Decrease of 25 Per Cent of the Operating Rate of the Steel Mills Is Predicted for the Next Few Weeks.*

**T**HE composite price of finished steel remains unchanged at 2.22 cents per pound.

But heavier premiums are being asked for prompt delivery.

August promises to be a better month for steel jobbers this year than for many years.

Business that would normally go to steel mills is being turned over to warehouses because of the failure of the mills to make prompt deliveries.

Jobbers report that July business was the same in volume as that of June, but it is expected that August orders will far surpass July.

Conspicuous among the orders are those placed for "penalty structural steel"—that is, contractors who must pay a penalty if buildings are not completed on schedule must forfeit so much money, hence turn to warehouses where mills fall down in deliveries.

Orders of 80 or 90 tons in a lot of this nature have been placed.

Galvanized sheets, which have been sold by some jobbers under prices imposed by the leading ones, are firming rapidly to one universal level.

Fuel shortage is directly responsible for all the trouble steel and iron makers are experiencing.

Just a year ago steel production was down to less than 20 per cent

of capacity and there was no one to venture to predict a better rate of output than 60 to 65 per cent before the end of 1922, and yet a few weeks ago it had risen to more than 80 per cent of normal.

The coal strike alone was not sufficient material to lower this rate, but when augmented by the railroad strike there was an immediate drop of more than 10 per cent and a further decrease amounting to 25 per cent within the next few weeks is predicted.

In contrast with steel producers, the average steel consumer is indisposed to discuss in detail his position as to operating prospects.

He is by nature always fearful when there is a strong market for steel that he will not get all he may need.

Thus he is disposed to apply pressure upon the mill for deliveries and consider at some other time, and privately, the chances of his being able to operate.

On account of this attitude the mills have had much difficulty in trying to get an exact line on the prospects for steel consumption.

Substantially the only steel which the mills will now sell far ahead is steel going into construction work or steel required for manufacturing jobs that are already securely in hand.



# Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

## METALS

### PIG IRON.

Chicago Foundry	\$27 00 to \$28 00
Southern Fdy. No. 2	26 00 to 27 00
Lake Sup. Char-coal	33 15
Malleable	27 00 to 28 00

### FIRST QUALITY BRIGHT TIN PLATES.

	Per Box
IC 14x20 112 sheets	\$10 00
IX 14x20	11 25
IXX 14x20	12 60
IXXX 14x20	13 90
IXXXX 14x20	15 25
IC 20x28	20 00
IX 20x28	22 50
IXX 20x28	25 20
IXXX 20x28	27 80
IXXXX 20x28	30 50

### COKE PLATES.

Cokes, 180 lbs...	20x28 \$11 80
Cokes, 200 lbs...	20x28 12 00
Cokes, 214 lbs...IC	20x28 12 35
Cokes, 270 lbs...IX	20x28 14 10

### BLUE ANNEALED SHEETS.

Base	per 100 lbs. \$3 75
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### ONE PASS COLD ROLLED BLACK.

No. 18-20	per 100 lbs. \$4 25
No. 22-24	per 100 lbs. 4 30
No. 26	per 100 lbs. 4 35
No. 27	per 100 lbs. 4 40
No. 28	per 100 lbs. 4 45
No. 29	per 100 lbs. 4 55

### GALVANIZED.

No. 16	per 100 lbs. \$4 70
No. 18-20	per 100 lbs. 4 85
No. 22-24	per 100 lbs. 5 00
No. 26	per 100 lbs. 5 15
No. 27	per 100 lbs. 5 30
No. 28	per 100 lbs. 5 45
No. 30	per 100 lbs. 5 95

### BAR SOLDER.

Warranted.	50-50 per 100 lbs. \$22 25
Commercial.	45-55 per 100 lbs. 20 75
Plumbers	per 100 lbs. 19 50

### ZINC.

In Slabs	6 95
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### SHEET ZINC.

Cask lots, stock	8 3/4 c
Less than cask lots	9 1/4 c

### COPPER.

Copper Sheets, base	20 1/4 c
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### LEAD.

American Pig	6 05
Bar	6 80
Sheet.	
Full coils	per 100 lbs. 9 00
Cut coils	per 100 lbs. 9 25

### TIN.

Pig Tin	per lb. 35 1/4 c
Bar tin	37 1/4 c

## HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

### ADZES.

Coopers' Barton's	Net
White's	Net

### AMMUNITION.

Shells, Loaded, Peters.	
Loaded with Black Powder 18%	
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater	
Grade	20 & 4%
Smokeless Leader	
Grade	20 & 4%
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%

### Gun Wads—per 1000.

Winchester 7-8 gauge 10&7 1/4 %	
" 9-10 gauge 10&7 1/4 %	
" 11-28 gauge 10&7 1/4 %	

### ASBESTOS.

Paper up to 1/16	6c per lb.
Rollboard	6 1/4 c per lb.
Millboard 3/32 to 1/2	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	\$6.00 per roll

### AUGERS.

Boring Machine	40&10%
Carpenter's Nut	50%
Hollow.	
Bonney's	per doz. \$30 00
Post Hole.	
Iwan's Post Hole and Well	30 and 5%
Vaughan's, 4 to 9 in., with out handles	per doz. \$14 00

### AWLS.

Brad.	
No. 3 Handled	per doz. \$0 65
No. 1050 Handled	" 1 40
Patent ast'd, 1 to 4	" 35
Harness.	
Common	per doz. \$1 05
Patent	" 1 00
Peg.	
Shouldered	" 1 60
Patented	" 75
Scratch.	
No. 18, Socket	
Handled	per doz. \$2 50
No. 344 Goodell.	
Pratt, list less	35-40%
No. 7 Stanley	per doz. \$2 25

### AXES.

First Quality, Single Bitted (unhandled), 3 to 4 lb., per doz.	\$10 50
Good Quality, Single Bitted, same weight, per doz.	9 50

### BALANCES, SPRING.

Universal.	
Sight Spring	List less 25%
Straight	List less 25%

### BARS, WRECKING.

V. & B. No. 12	\$0 34
V. & B. No. 24	0 43
V. & B. No. 32	0 57
V. & B. No. 30	0 48
V. & B. No. 350	0 63

### BEVEL, TEE.

Stanley's Rosewood handle, new list	Net
Stanley iron handle	Net

### BINDING CLOTH.

Zinc	55%
Brass	40%
Brass, plated	60%

### BITS.

Auger.	
Jennings Pattern	Net
Ford Car.	25% off
Ford's Ship.	25% off
Irwin	35%
Russell Jennings	less 10%
Clark's Expansive	33 1/2 %
Center	10%

### Countersink.

American Snailhead	1 75
" Rose	2 00
" Flat	1 40

### Dowel.

Russel Jennings	plus 20%
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### Gimlet.

Standard Double Cut Gross	\$8 40
Nail Metal Single Cut	Gross \$4 00—\$5 00

### Reamer.

Standard Square	Doz. \$2 50
American Octagon	" 2 50

### Screw Driver.

No. 1 Common	Each 18c
No. 26 Flat	Each 70c

### BLADES, SAW.

Wood.	
Atkins 30-in.	
Nos.	6 40 26
	\$8 90 \$3 45 \$5 40
Diaton 30-in.	
Nos.	6 66 26
	\$9 45 \$10 05 \$9 45

### BLOCKS.

Wooden	20%
Patent	20%

### BLOW TORCHES (See Firepots).

### BOARDS.

Stove.	
26x26, wood lined	Per Doz. \$14 45
28x28, " "	16 95
30x30, " "	19 00
26x26, paper lined	8 15
28x28, " "	9 10
30x30, " "	10 80

### Wash.

No. 760, Banner Globe (single)	per doz. \$5 25
No. 652, Banner Globe (single)	per doz. 675
No. 801, Brass King	per doz. 8 25
No. 860, Single—Plain Pump	6 25

### BOLTS.

Carriage, Machine, etc.	
Carriage, cut thread, %x6 and sizes smaller and shorter	60%
Carriage sizes, larger and longer than %x6	50 & 5%
Machine, %x4 and sizes smaller and shorter	60 & 10%
Machine, sizes larger and longer than %x4	60-10 & 5%
Stove	75%

### Mortise, Door.

Gem, iron	5%
Gem, bronze plated	5%

### Barrel.

Cast	Net
Wrought	"
Wrought, bronzed	"

### Flush.

Wrought	Net
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### Spring.

Wrought	"
Wrought, heavy	"

### Square.

Wrought	"
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### BOXES.

Mail. No. 2	4 10
Per doz.	\$18 00 \$23 00 \$29 00

### Cast Iron.

Per doz.	\$9 50
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### Mitre.

Stanley's	Net Prices
Stearns, No. 2	per doz. \$48 00

### BRACES, RATCHET.

Goodell-Pratt No. 408	\$4 60
" " No. 410	4 80
" " No. 412	5 00
V. & B. No. 444 8 in.	4 65
V. & B. No. 333 8 in.	4 30
V. & B. No. 322 8 in.	4 00
V. & B. No. 111 8 in.	3 50
V. & B. No. 11 8 in.	3 05

### BURRS, RIVETING.

Copper Burrs only	50%
Tinners' Iron Burrs only	Net

### BUTTS.

Steel, antique copper or dull brass finish—case lots	
3 1/2 x 3 1/4	per dozen pairs \$2 75
4 x 4	" 3 80

### Heavy Bevel steel inside sets, case lots—

per dozen sets	7 50
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### Steel bit keyed front door sets, each

1 80	
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### Wrought brass bit keyed front door sets, each

3 25	
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### Cylinder front door sets, each

7 00	
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### CALIPERS.

Double	Net
Inside and Outside	"
Wing	"

### CARRIERS.

Hay.	
Diamond, Regular	each, nets
Diamond, Sling	"

### CASTER.

Standard—Ball Bearing	50 & 10%
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### Bed

Common Plate	40%
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### Brass Wheel

Iron and porcelain wheels, new list	50%
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### Philadelphia Plate, new list

list	50%
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### Martin's

	40%
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### CATCHERS, GRASS.

No. 160S	per doz. \$12 25
No. 16SS	" 14 01

### CEMENT, FURNACE.

American Seal, 5 lb. cans, net	\$0 45
" 10 lb. cans,	" 30
" 25 lb. cans,	" 1 87
Asbestos, 5 lb. cans,	" 45
Pecora, 5 lb. cans,	" 45
" 10 lb. cans,	" 30
" 25 lb. cans,	" 1 87

### CHAINS.

Breast Chains.	
With Slide	per doz. pairs \$5 50
Without Slide	" 5 06
Doublestack	" 9 35
With Covert Snaps	" 6 33

### Picture Chains.

Light brass, 3 ft., per doz.	1 25
Heavy brass, 3 ft.	" 1 75

### Sash Chain. (Morton's)

Steel, per 100 ft.	\$2 50
"	2 10
"	3 60

### Champion Metal.

0R	5 40
2R	5 60
1R	7 75

### Champion Metal—Extra Heavy.

1H	\$9 50
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### Cable Sash Chains.

Steel	List Net Plus 15%
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### CHALK, CARPENTERS.

Blue	per gro. \$2 00
Red	" 2 00
White	" 1 80
Common White School	" 0 30
Crayon	" 0 30

### CHIMNEY TOPS.

In bags	per bag \$1 80
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### CHECK, DOOR.

Corbin	Net list
Russwin	Net list

### CHISELS.

Cold.	
V. & B. No. 25, 1/4 in., each	\$0 26
V. & B. No. 25, 1/2 in., each	41

### Diamond Point.

V. & B. No. 15, 1/4 in.	0 31
V. & B. No. 15, 1/2 in.	0 48

### Firmer Bevelled.

V. & B. No. 65, 1/4 in.	0 31
V. & B. No. 65, 1/2 in.	0 40

### Socket Firmer.

V. & B. No. 50, 1/4 in.	0 31
V. & B. No. 50, 1/2 in.	0 57

### CHUCKS, DRILL.

Gal. ....	5	7	10
Each	\$2.00	\$4.60	4.85



<b>CLEAVISES.</b>		<b>ELBOWS—Stove Pipe.</b>		<b>HAMMERS, HANDLED.</b>		<b>HOOKS.</b>	
Malleable	10c lb.	1-piece Corrugated, Uniform	Dox.	Each, net		Awning, No. 60.....	Net
<b>CLIPPERS.</b>		5-inch	\$1 25	Blacksmiths', Hand, No. 0	\$0 87	Belt.	
Belt (Carolus).	\$2 50	6-inch	1 40	26-oz.	87	Brown's	70&5%
No. 1.	3 25	7-inch	1 80	Engineers', No. 1, 26-oz.	87	Jones'	65&5%
No. 3.	4 25	<b>Special Corrugated.</b>		Farriers', No. 7, 7-oz.	97	Box.	
<b>CLIPS.</b>		6-inch	\$1 15	Machinists', No. 1, 7-oz.	67	No.	3 10 13
Axle	65&5%	7-inch	1 60	Nail.		Each	\$0 29 0 77 0 38
Damper.		<b>Uniform, Collar Adjustable</b>		Vanadium, No. 41, 20-oz.	1 45	Bush.	
Acme, with tall pieces,		5-inch	\$1 60	each		Common Axe Handle,	
per doz.	\$1 25	6-inch	1 80	Vanadium No. 41½, 16-oz.	1 45	per doz.	\$20 00
Non Rivet tall pieces,		7-inch	2 25	V. & B. No. 11½, 16-oz.	1 04	Chain.	
per doz.	25	<b>FACES, WOOD—50% off list.</b>		each		Inch. ¼ ¼ 5/16 7/16 ¾	
Non Rivet Clips.	90	<b>FENCING.</b>		Garden City, No. 11½, 16	77	Pr. 100 \$7 60-8 10 9 75 11 50 12 50	
Hamme	50c	Lawn fence, single space,		oz., each	72	Clothes Line.	
<b>COLLARS, STOVE PIPE.</b>		36-inch	\$ 9 12	Shoe, Steel, No. 1, 13 oz.,	65	Japanned...per doz.	35c—1 00
Lacquered.		Lawn fence, single space,	10 20	each		Galvanized...	65c—2 25
Inches.	5 6 7	42-inch	12 50	Tack.		Conductor.	
Fancy pattern,		Lawn fence, double space,	12 50	Magnetic.		Conductor hooks	20-10%
per doz.	65c 75c \$4 00	32-inch	13 75	No. 5, each.	72	Milcor	Net.
<b>COMPASSES.</b>		42-inch	13 75	<b>HAMMERS, HEAVY.</b>		Corn.	
Carpenters'	15%	Field fence, 26-inch, No. 10	26 50	Farriers'	20%	Common, riveted, red, per dz.	Net
<b>COPPERS—Soldering.</b>		Same, 6 filling.	33 32	Mason's.		Little Giant.....	
Pointed Roofing.		Field fence, 32-inch, No. 10	30 34	Single and Double Face...	50%	Grass.	
3 lb. and heavier...per lb.	40c	Same, 6 filling.	39 41	<b>HANDLES.</b>		Common Nos. 1 3 5 7	
2 lb.	48c	<b>FILES AND RASPS.</b>		Agricultural Tool.		Per doz.	\$4 25 3 25 3 40 3 50
2½ lb.	45c	Heller's (American)	70%	4½-inch, plain...per doz.	\$3 50	Hammer.	
1½ lb.	55c	American	70%	Auger.		With plate...per doz.	\$1 00
1 lb.	50c	Arcade	60 & 10%	Common Assorted, per doz.	\$0 75	With screw...	95
<b>CORD.</b>		Black Diamond	50-10%	Pratt's Adjustable, Nos.		Picture	50%&50%&10%
Picture.		Eagle	60-10%	1 & 2, per doz.	6 00	Potato and Manure...Net	
White Wire.....	60 & 5%	Great Western	60 & 10%	Ives' Adjustable...per set	1 35	<b>HOSE.</b>	
Sash.		Kearney & Foot	60 & 10%	Ax.		Per Ft.	
Spot No. 7.....per lb.	65c	McClellan	60 & 10%	Hickory, No. 1...per doz.	3 00	¼-inch molded reel	12½c
Common, No. 7.....	40c	Nicholson	50-10-10%	Hickory, No. 2...	2 00	¼-inch 3 ply duck...	12½c
<b>COTTERS, SPRING.</b>		Simonds	60%	1st quality, second growth	6 00	¼-inch 4 ply duck...	16c
All sizes	37½%	J. Barton Smith	50-10-5%	Special white, 2nd growth	4 50	¼-inch 5 ply multiple...	10½c
<b>COUPLINGS, HOSE</b>		X F	Net List	Chisel.		<b>IRONS.</b>	
Standard gauge.....	35%	<b>FIRE POTS.</b>		Hickory, Tanged, Firmer		Sad.	
26 gauge.....	20%	Clayton & Lambert's—		Assorted	per doz. 55c	Charcoal	per doz. \$11 00
<b>CUTTERS.</b>		East of west boundary line of		Hickory, Socket Firmer.		Common, polished, per	
Glass.		Province of Manitoba, Canada,		Assorted	per doz. 70c	100 lbs.	7 75
Red Devil.....	Net	No. Dakota, So. Dakota, Ne-		Coal Pick	40%	No. 70 Asbestos.....	\$1 50 net
Meat.		braska, Kansas, Oklahoma,		Drifting Pick	40%	No. 100	1 75 net
Enterprise—Nos. 5 10 12		Amarillo, San Angelo and La-		Hammer and Hatchet.		Common, nickel plated..	8 25
Each	\$2 50 \$4 25 \$3 75	redo, Texas.....	55%	No. 1, per doz.	\$0 80	Mrs. Pott's.	
"	Nos. 22 32	West of above boundary	52%	Second growth hickory, per		No. 50 J. Enterprise, per set	Net
"	Nos. 50 50 \$8 50	line		doz.	1 20	No. 55 J.	"
Pipe.		Turner Brass Works—		Hay and Manure Fork, Han-		No. 50 T.	"
Saunders', Nos. 1 2 3		No. 43 Kerosene-Gasoline		dies, Strap and Ferrule..	per doz. \$7 00	No. 55 T.	"
Each	\$1 85 2 75 6 75	Master Torch, 1 qt....	\$5 40	Screw Driver.		<b>JACKS.</b>	
Slaw and Kraut.	Per doz.	No. 48 Kerosene-Gasoline		Assorted	each 6c	Wagon.	
4-knife Kraut.....	\$20 00-55 00	Master Torch, 1 qt....	6 73	Shovel and Spade.....	Net	Richard's No. 1...per doz.	\$15 50
3-knife Kraut,		No. 95 Double Jet Torch,	6 95	<b>HANGERS.</b>		Oliver.	
8x27 in.	13 00-18 00	No. 30 Kerosene-Gasoline	6 48	Door.		Each	\$0 60 \$0 80
1-knife Slaw.....	2 50	Torch, 1 qt. (new line).	6 48	Matchless	Net	Nos.	0 00
2-knife Slaw.....	3 00	No. 33 Single Jet Gasoline	6 93	Reliable	Net	Standard.	
Washer	11 00	Torch, 1 qt.	6 93	Richards	25%	Each	\$0 60 \$1 00
<b>DAMPERS, STOVE PIPE.</b>		Plumbers' Furnaces.		Garage Door.		Nos.	1 2
Diamond.		No. 53 Galv. Iron Tank	6 75	(See Garage Door Hdw.)		Big Lift	40%
6-inch	per doz. \$1 50	with Bulb, 7 pts.	6 75	Conductor Pipe.		Tiger	40%
<b>DIGGERS.</b>		No. 63 Galv. Iron Tank	7 47	Iwan's Perfection.....	50%	<b>KETTLES.</b>	
Post Hole.		No. 56 Straight Side Steel	8 82	Milcor Perfection	Net	Brass	15%
Iwan's Split Handle		Tank with Bulb, 7 pts.	9 54	Eaves Trough.		Cauldron	40&5%
(Eureka)		No. 66 Straight Side Steel		Steel hangers	30%	Copper	per lb. 27
4-ft. Handle...per doz.	15 00	Tank, with Pump, 7 pts.	9 54	Triple twist wire.....	10%	Maslin	40&10%
7-ft. Handle...per doz.	20 00	<b>GALVANIZED WARE</b>		Milcor Eclipse	Net	Sugar	50%
Iwan's Hercules pattern,		Pails (Competition), 3-qt....	1 65	Milcor Triplex	Net	<b>KNIVES.</b>	
per doz.	13 00	10-qt.	1 85	Hinge, Wrought, with staples, Net		Beet Topping.	
Diyliders, Wing	25%	12-qt.	2 00	HATCHETS.		Clyde, 9-in. Scimitar Blade,	
<b>DRILLS.</b>		14-qt.	2 30	Size No. 2 extra quality		doz.	25%
Bench.		Wash tubs, No. 1.....	5 30	broad	\$16 00	California	25%
Blacksmiths' Twist (New		No. 2.....	6 00	No. 2 Warranted Shingling	12 00	Butcher.	
List)	40%	No. 3.....	7 00	Competitive Forged	8 00	Beechwood Handles, 6-inch	
<b>GIMLETS.</b>		<b>GARAGE DOOR HARDWARE</b>		<b>HAY RACK BRACKETS</b>		Beechwood Handles, 7-inch	
Discount	65% and 10%	Stanley	All net	Wenzleman's No. 1		blade	25%
<b>GLASS.</b>		<b>GAUGES.</b>		Wenzleman's No. 2		Beechwood Handles, 3-inch	
Single Strength, A and B,		Marking, Mortise, etc.....	Nets	per doz. sets	\$18 00	blade	25%
all sizes	85%	Wire.		per doz. sets	19 20	Cooper's Hoop.....	25%
Double Strength, A and B,		Disston's	25%	<b>HINGES.</b>		Drawing.	
all sizes	85%	<b>GLUE.</b>		Blind.		Standard	25%
<b>GLUE.</b>		Bulk.		Clark's Gravity		Adjustable	25%
B Amber.....per lb.	35c	Bulk.		No. 1.....per set	45c	Barton's Carpenters'	25%
A white	40c	Bulk.		No. 2.....	88c	Hay.	
H. S. Amber.....	32c	Bulk.		Gate.		Iwan's Solid Socket.....	25%
<b>Liquid.</b>		Bulk.		Clarks.....	1 2 3	Heath's	25%
Army & Navy.....	40%	Bulk.		Hgs. & Lth, ea. 85c	1 10 2 40	Iwan's Sickle Edge.....	25%
List "A"	37½%	Bulk.		Hinges only—		Iwan's Imp'd Serrated.....	25%
List "B"	35%	Bulk.		Upper	\$1 25	Hedge.	
List "C"	25%	Bulk.		Lower	1 55	Challenge	25%
<b>GREASE, AXLE.</b>		Bulk.		Latches only—		Disston's No. 1.....	25%
Wood Boxes.		Bulk.		No. 1.....each	25c	Putty.	
Frazer's.....per gro.	\$13 00	Bulk.		No. 2.....	28c	Common	25%
Hub Lightning.....	7 50	Bulk.		Screen Door.		Lander's	25%
Wood Pails.		Bulk.		1751—3x3	doz. \$2 00	Scrapping.	
Frazer's, 15 lb. \$1.00; 25 lb.		Bulk.		1753—2½x2½	1 95	Beech Handle	25%
\$1.50 each.		Bulk.		Spring.		Lander's	25%
Hub Lightning, 15 lb. 90c; 25		Bulk.		Chicago.....Add 10% to list		<b>KNOBBS.</b>	
lb. \$1.21 each.		Bulk.		Gem	25%	Door.	
<b>HAFTS, AWL.</b>		Bulk.		Matchless	40%	Mineral	per doz. \$2 00
Brad.		Bulk.		New Idea.....per gross	\$5 90	Porcelain	2 00
Common	per doz. \$0 35	Bulk.		Wrought Iron.		Jet	2 00
Peg.		Bulk.		Per 100 pails with screws:		<b>LADDERS.</b>	
Patent, plain top	80	Bulk.		Light Strap Hinges, No. 3	\$12 00	Step.	
Patent, leather top	80	Bulk.		Heavy Strap Hinges, No. 4	15 75	Common, per ft.....	23c
Sewing.		Bulk.		Light T Hinges...No. 3	12 10	Common, with Shelf, add 10c	
Common	24	Bulk.		Heavy T Hinges...No. 4	20 00	IXL	84c
Patent	55	Bulk.		Extra Heavy T Hinges.		10 to 16 ft.....	60c
<b>HOES.</b>		Bulk.		No. 4	21 50	<b>LANTERNS.</b>	
Garden	Net	Bulk.		Screw Hook and Strap.		Per doz.	
<b>HOES.</b>		Bulk.		6 to 12 in...per 100 lbs.	\$7 75	Monarch tin, hot blast....	\$ 25
<b>HOES.</b>		Bulk.		14 to 20 in.	7 50	Diets No. 3 cold blast....	13 00
<b>HOES.</b>		Bulk.		22 to 36 in.	7 25	Best tubular	8 25
<b>HOES.</b>		Bulk.		Screw Hook and Eye.		Competition lanterns No. 0	
<b>HOES.</b>		Bulk.		½ in.....per doz. pair	\$2 00	tubular	8 55
<b>HOES.</b>		Bulk.		¾ in.....	3 50	<b>LEATHER, LACE.</b>	
<b>HOES.</b>		Bulk.		¾ in.....	5 00	Rawhide ¼-inch...100 ft.	\$2 00
<b>HOES.</b>		Bulk.		<b>HOES.</b>		¾-inch	4 00
<b>HOES.</b>		Bulk.		<b>HOES.</b>		<b>LEATHERS, PUMP.</b>	
<b>HOES.</b>		Bulk.		<b>HOES.</b>		Valve and Plunger.....	Net

LEVELS.	
Diston, No. 22 Asst.....	\$23 05
" No. 12, 20 in. each	1 83
" No. 22, 24 in. each	2 40
" Shafting, 6 in. ....	19 80
" 6 in. gr. glass	24 20
" No. 1 Asst.....	5 75
" No. 9 Asst.....	12 40
" 24-26 in. ....each	1 02
" 28-30 in. ....each	1 00

LIFTERS.	
Stove Cover.	
Coppered .....per gro.	\$6 00
Alaska .....	4 75
Transom.	
Payson's .....	55%

LINES.	
Jute .....	per lb. 25c
Sisal .....	" 35c
Cotton .....	" 25c
Braided Cotton .....	" 52c

LINING, STOVE.	
Bricks .....	per crate 42c

LOCKS.	
Barn Door.	
No. 60 Stearns.....per doz.	\$12 00
No. 80 .....	24 00

MACHINES.	
Riveting.	
Stearns No. 1.....per doz.	\$16 00
Tenoning.	
No. 50 Pearce's Spoke, each	\$16 00

MALLET.	
Carpenters'.	
Fibre Head, No. 2 per doz.	\$16 50
" No. 3 .....	19 50
" No. 4 .....	28 50
Round Hickory .....	per doz. \$3 00—5 00
Tinners'.	
Hickory .....	per doz. \$2 25

MATS.	
Door.	
National Rigid .....	5&10&5%
Acme Steel Flexible.....	50%

MEASURES.	
Galvanized, doz.....	Nets
Japanned, doz.....	Nets

MITRES.	
Galvanized steel mitres, and caps, end pieces, outlets.....	30%
Milcor .....	Net

MOPS.	
Cotton, Star (Cut Ends).	
Pounds 12' 15' 18' 24'-3-oz.	
Per doz. \$4 00 4 35 5 50 7 00	
Enterprise .....	16%
Parker .....	50&5%

NAILS.	
Cut Steel .....	\$4 45
Cut Iron .....	4 45
Wire.	
Common .....	3 10
Cement Coated.	
Small Lots .....	2 65

HORSESHOE.	
Asuable .....	55&5%
Capwell .....	15%
Perfect .....	55&5%
Putnam .....	20&5%
Star .....	30&5%

Picture.	
Brass Heads .....	25%
Brads .....	50&5%
Furniture .....	List plus 15%

NETTING, POULTRY.	
Galvanized before weaving.....	50%
Galvanized after weaving.....	40%

NIPPERS.	
End Cutting.	
Berg's (Swedish) In. 5	6
Per dozen.....	\$12 60 15 20

End and Diagonal Cutting.	
Berg's (Swedish) In. 5	6
Per dozen.....	\$10 05 13 00

Hoof.	
Heller's .....	40&10%
V. & B., No. 52, each.....	\$2 25

NOZZLES.	
Hose.	
Magic .....	per doz. \$9 50
Diamond .....	5 75

OILERS.	
Chase Pattern.	
Brass and Copper .....	10%
Zinc .....	30%

Railroad.	
Coppered .....	33%
Steel.	
Copper Plated .....	50-10-5%

Can.	
Delmonico .....	per doz. \$1 30
Never Slip .....	65

Crate.	
V. & B.....per doz.	\$7 25-11 00

Cream.	
14-qt. without gauge,	
18-qt. without gauge,	per doz. \$9 50
20-qt. without gauge,	per doz. 11 00
20-qt. without gauge,	per doz. 11 75

Sap.	
10-qt., IC Tin.....per doz.	\$4 00
12 .....	5 50

Stock.	
Galv. qts. 14 16 18 20	
Per doz. \$9 75 10 75 12 75 14 50	

Water.	
Galvanized qts. 10 12 14	
Per doz.....	\$5 75 6 50 7 25

Wood.	
Cable, 2-Hoop .....	per doz. Nets
Cable, 3-Hoop .....	" Nets
Cedar, 3-Hoop, brass .....	" Nets

PANS.	
Dripping .....	Net
Fry.	
Common .....	Nets
Acme .....	"

Roasting.	
Patton.	
Nos. .... 1 2 3 4	
Per doz. ....	Nets
Neverburn .....	"
Savory, No. 200.....per doz.	\$3 40

PAPER.	
Roofing.	
Mayor, 1-ply .....	Per square \$1 33
" 2-ply .....	2 24
" 3-ply .....	2 65
Red Rosin .....	per ton \$111 45

Sand and Emery.	
No. 1 per ream, best grade	\$5 40
No. 1, per ream, cheaper grade .....	4 35

Potato.	
Goodell's Saratoga, 10 1/4 in., doz. ....	6 50
Goodell's Saratoga, 5 in., doz. ....	5 50

PICKS.	
Adze Eye Ore.....	22 1/2%
Drifting and Poll Picks.....	22 1/2%
Plumbs, Railroad .....	22 1/2%
Surface .....	22 1/2%

PINCERS.	
Carpenters', cast steel.	
No. .... 8 10 12	
Each \$0 55 0 72 \$0 93 \$1 03	
Blacksmiths', No. 10.....	\$0 95
Heller's .....	List plus 10%

PINS.	
Clothes.	
Common, per box of 5 gro.	\$0 95

Picket.	
Pluted, 15-in .....	per doz. \$1 10
Pluted, 21-in .....	1 60
Spiral .....	1 90

PIPE.	
Conductor.	
Plain Round and Round Corrugated.	
29 Gauge .....	70&5%
28 .....	70&5%
26 .....	70&5%
24 .....	70&5%

Square Corrugated A and B.	
Octagon.	
29 Gauge .....	65%
28 .....	65%
26 .....	65%
24 .....	65%

Prices for Galvanized Toncan.	
Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.	

Stove.	
26 gauge, 5 inch E. C. ....	14 00
26 gauge, 6 inch E. C. ....	15 00
26 gauge, 7 inch E. C. ....	17 00
28 gauge, 5 inch E. C. ....	12 00
28 gauge, 6 inch E. C. ....	13 00
28 gauge, 7 inch E. C. ....	15 00
30 gauge, 5 inch E. C. ....	10 00
30 gauge, 6 inch E. C. ....	11 00
30 gauge, 7 inch E. C. ....	13 00

T-Joint Made up.	
6-inch .....	per 100 35 00

Furnace Pipe.	
Double Wall Pipe and Fittings	40-10%
Single Wall Pipe, Round	
Pipe Fittings and Back Iron	40-10%
Galvanized and Black Iron	
Pipe, Shoes, etc.....	40-10%
Milcor, galvanized .....	Net

Stanley Iron Bench.....	
Net	

V. & B. No. 6.....	
each \$0 52	
No. 7 Gas.....	0 55
Double Duty 108 .....	0 50
Nut No. 3.....	0 60

Lineman's Slide Cutting.	
Berg's (Swedish), In. 6 7 8	
Bik. Pol. Face, doz. ....	\$10 70 20 00 23 35

Long Nose Slide Cutting.	
Berg's (Swedish) In. 5	6
Bik. Pol. Face, doz. ....	\$12 25 15 20

Flat and Round Nose.	
Berg's (Swedish)	
Flat, In. .... 4 6 8	
Bik. Pol. Face, Doz. ....	\$8 90 13 35 19 65
Berg's (Swedish)	
Round, In. .... 4 6 8	
Bik. Pol. Face, Doz. ....	\$11 15 16 30 22 35

POINTS, GLAZIERS.	
No. 1, 2 and 3.....per doz.	75c

POINTERS, SPOKE.	
Stearns' No. 1.....per doz.	\$10 00
No. 2 .....	12 00

POKERS, STOVE.	
Wrt Steel, str't or bent,	
.....per doz.	\$0 75
Nickel Plated, coil hant's ..	1 10

PRESSES, FRUIT AND JELLY.	
Enterprise Manufacturing Co.	25%

PRUNERS.	
Diston's Pole .....	per doz. \$18 00
Water's Improved, per doz.	60%
Nail.	
Giant .....	per doz. \$14 50
Never-Slip .....	17 00

PULLEYS.	
Awning-Jap'd .....	10%
Clothes Line .....	10%

Hay Fork.	
Iron Wheel, 5-in. ....per doz.	\$2 50
Wood Wheel, 5-in. ....	3 65
Wood Wheel, 6-in., pass knot .....	3 00

Sash.	
Common .....	Net
Common-Sense, 2-in. ....	Net
Empire Pattern, 2-in. ....	Net
Ideal .....	Net
Steel .....	Net

PUMPS.	
Spray.	
Midget Junier.....per doz.	\$3 75
New Misty .....	5 00
Crescent .....	6 50

PUNCHES.	
Conductors.	
No. 22 .....	per doz. \$3 00
Machine .....	per lb. 25
Saddlers'.	
Common.....per doz.	\$1 50 to \$5 00

Revolving Spring.	
Stearns, No. 10.....per doz.	\$ 8 00
" No. 40.....	16 00
" No. 60.....	19 00

Parker Metal Punch No.	
OX .....	each \$7 00
Whitney's Ball Bearing.	
.....Prices on application	

FARERS.	
Goodell's .....	per doz. \$10 80
Turntable .....	11 40
White Mountain .....	8 40
Reading No. 78 .....	11 40

PUTTY.	
Commercial Putty, 100-lb.	
kits .....	\$4 75

RAKES.	
Garden.	
Steel, Bow, 12-inch Teeth	\$8 50
Steel, Bow, 14-inch .....	9 25
Malleable Iron, 12-in. ....	4 75
Malleable Iron, 14-in. ....	5 00

Hay.	
Wood, 10 Teeth.....	\$4 00

Lawn.	
30 Teeth .....	per doz. 5 50

RAZORS—SAFETY.	
Gillette .....	per doz. \$45 00
Auto Strip .....	45 00
Gem .....	8 40
Gem (3 doz. lots).....	8 00
Ever Ready .....	8 40
Ever Ready (3 dz. lots) ..	8 00

RAZORS—STRAIGHT.	
Star (Honing) .....	50%

RAZOR STROPS.	
Star (Honing) .....	50%

REGISTERS.	
Cast Iron .....	25%
Steel and Semi-Steel.....	40%
Baseboard .....	40%
Adjustable Ceiling Ventilators	40%
Register Faces—Cast and Steel	
Japanned, Bronzed and Plated.	
4x6 to 14x14.....	40%
Large Register Faces—Cast.	
14x14 to 38x42.....	60%
Large Register Faces—Steel.	
14x14 to 38x42.....	60%

RIDGE ROLL.	
Galvanized.	
Crated .....	70-25%
Wired .....	70-25-5%
Milcor .....	Net

RINGS AND RINGERS.	
Full.	
Copper .....	2 1/4-in. 3-in.
Per doz. ....	\$2 40 \$2 65
Rea's Improved Self-Piercing copper,	
.....doz.	\$ 40
Steel, per doz.....	1 50 1 80

Fruit Jar.	
White .....	per lb. 80

RIVETS.	
Copper Belt .....	50% Discount
Coppered Iron .....	50%
Tinners' .....	50%

Hame.	
per lb.	\$0 17
Slotted Clinch per doz.	\$0 1 10

Tubular.	
Nos. 1 and 2 assorted sizes,	
50 in box.....doz.	75c
Nos. 1 and 2 assorted sizes,	
10 in box.....doz.	1 40

ROPE.	
Cotton.	
1/4, 5-16 in. Com. on reels,	
per lb. ....	80c
1/4, 5-16 in. Com., in coils,	
per lb. ....	80c

Sisal.	
1st Quality, base 1 1/4c to 1 1/2c	
No. 2.....	13c to 14c

Manilla.	
1st Quality standard	
brands .....	17 1/2c to 18 1/2c
No. 2 .....	16c to 16 1/2c
Hardware Grade, per lb.	12 1/2c

Pure Manilla.	
1st Quality, base,	
per lb. ....	17 1/2c to 18 1/2c
Hardware Grade, per lb.	11 1/2c

per lb. ....	17½c to 18½c
Hardware Grade, per lb.	11½c

**SAWS.**



## ADVERTISERS' INDEX

The dash (—) indicates that the advertisement does not appear in this issue.

SETS.		STONES.	
Nail.		Axe.	
Square head.....per doz. 1 84		Hindostan .....per lb. New Nets	
Cup point, knurled " 1 78		More Grit " " "	
Rivet.		Washita " " "	
Farmers' 3-4.....0 19		Emery.	
Tinners' 3-4.....0 40		No. 126.....per doz. New Nets	
00-0.....0 60		Oil—Mounted.	
Saw.		Arkansas Hard	
Atkins No. 10.....per doz. \$3 80		No. 7.....per doz. New Nets	
No. 12.....6 20		Arkansas Soft	
Disston's Monarch " 9 90		Washita No. 717 " " "	
No. 13.....13 20		Oil—Unmounted.	
Leach's ".....40		Arkansas Hard per lb. New Nets	
Nash's Hand ".....3 15		Arkansas Soft " " "	
Nash's X-Cut ".....4 20		Lily White " " "	
Stillman's Lever.....1 30		Queer Creek " " "	
Stillman's X-Cut.....2 50		Washita " " "	
Whiting Pattern, " 7 50		Seythe.	
No. 21.....7 50		Black Diamond per gro. New Nets	
Eccentric Anvil, " 7 50		Crescent " " "	
Hand No. 395, " 7 50		Green Mountain " " "	
N. P. Norrill " 14 50		LaMolle " " "	
Pattern " 14 50		Extra Quinne- bog " " "	
		Red End " " "	
SHEARS.		STOPS, BENCH.	
Nickel Plated, Straight, 6" \$12 90		No. 10 Morrill pat- tern.....per doz. \$11 00	
" " " 7" 14 85		No. 11 Stearns pat- tern.....10 00	
Japanned, Straight 6" 11 00		No. 15 Smith pattern " 7 00	
" " " 7" 12 40			
" " " 8" 13 80			
SHEAVES, SLIDING DOOR.		STOPPERS, FLUE.	
Common.		Common.....per doz. \$1 10	
Inches.....3 4 5		Gem, flat, No. 3.....1 00	
Per set \$1 40 1 75 2 40		Gem, No. 1.....1 10	
Hatfield's.			
Per set \$1 80 2 10 2 75 25			
SHINGLES.		STRETCHERS.	
Zinc (Illinois).....Per Square \$15 00		Carpet.	
SHOES.		Bullard's.....per doz. \$3 90	
Conductor.....60%		Excelsior " 5 25	
SHOVELS AND SPADES.		Malleable Iron.....70	
Hubbard's.		Perfection " 6 30	
No. A B C D		King " 4 50	
1 16 00 15 10 14 45 13 70		Wire.	
2 16 35 15 60 14 85 14 10		O. S. Elwood, No. 1 per doz. Nets	
3 16 75 16 00 15 25 14 45		O. S. Elwood, No. 2 " "	
4 17 10 16 35 15 60 14 85			
Post Drains & Ditching.		SWIVELS.	
Hubbard's.		Malleable Iron.....per lb. \$0 10	
Size A B C		Wrought Steel.....per gro. 4 50	
14".....17 15 16 40 15 65			
16".....17 50 16 75 16 00			
18".....17 85 17 10 16 85			
20".....18 20 17 45 16 70			
22".....18 55 17 80 17 05			
Alaska Steel.		TACKS.	
D-Handle.....per doz. \$3 50		Bill Posters' 6-oz., 25-lb. boxes	
Long Handle " 3 00		per lb.....15c	
SKATES.		Upholsterers' 6-oz., 25-lb. boxes, per lb.....15½c	
Roller.			
Ball Bearing—Boys'.....\$1 50			
Ball Bearing—Girls'.....1 40			
SNAPS, HARNESS.		TAPES, MEASURING.	
Covered Spring.....Add 30%		Asses' Skin.....List & 40%	
Judd's Pattern Add 33 1-6% to list			
SNATHS.		THERMOMETERS.	
Double Ring Bush.....per doz. \$ 9 75		Tin Case.....per doz. \$0c & \$1 25	
Patent Loop, Bush.....10 00		Wood Back.....\$2 00 & 12 00	
Patent Loop, Grass.....8 75		Glass.....12 00	
SNIPS, TINNERS'.		TIES.	
Clover Leaf.....40&10%		Bale.	
National.....40&10%		Single Loop, carload	
Star.....50%		lots.....75&7%	
Milcor.....Net		Single Loop, less than	
SPRINGS, DOOR.		car lots.....70&15%	
Perfect.			
Nos.....2 3 4 5 6 7			
Per doz. 45c 50c 55c 65c 80c 90c			
Reliance.			
Light Medium Heavy			
Per doz. \$1 80 2 40 3 75			
Torrey's.....per doz. 1 85			
SPRINKLERS, LAWN.		TRAPS.	
Stearns' No. 1.....per doz. \$11 50		Game with Chains. Per doz.	
SQUARES.		Victor No. 1.....\$1 83	
Steel and Iron.....Net		Onida Jump No. 1.....2 20	
(Add for bluing, \$3.00 per doz. net)		Newhouse No. 1.....4 88	
Mitre....."		Mouse and Rat. List per gross.	
Try....."		Sure Catch Mouse Traps.....\$ 3 70	
Try and Bevel....."		Vim Mouse Traps.....3 70	
Try and Miter....."		Short Stop Mouse Traps. 3 20	
Fox's.....per doz. \$8 00		Wood Choker Mouse	
Winterbottom's.....10%		Traps, 4 hole.....17 00	
STAPLES.		Sure Catch Rat Traps.....16 00	
Barbed.....per lb. 21¢ & 22c		Vim Rat Traps.....15 00	
Butter, Tub.....16¢ & 19c		Short Stop Rat Trap.....15 00	
Fence—		Dead Easy Rat Traps.....17 00	
Polished.....per 100 lbs. \$5 45		Star Rat Traps.....50 00	
Galvanized.....6 15		Erie.....54 00	
Netting.		Packed in One Bushel Band Stave	
Galvanized.....per 100 lbs. 6 54		Baskets.	
Wrought.			
Wrought Staples, Hasps and			
Staples, Hasps, Hooks and			
Staples, and Hooks and			
Staples.....50&10%			
Extra heavy.....35%			
TOWELS.		TUBS, WASH.	
Cement.		Standard, Wood. Ex.	
Atkins No. 6.....19 50		Nos. 2 3 1 large	
No. 9.....25 50		Per doz. \$9 50 11 25 12 75 15 50	
Disston's.....30%		Galvanized.	
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## CLASSIFIED INDEX

- Ball Ties.**  
American Steel & Wire Co., Chicago, Ill.
- Bearings—Damper.**  
Parker Supply Co., New York, N. Y.
- Bolts—Stove.**  
Kirk-Latty Mfg. Co., Cleveland, Ohio
- Brakes—Cornice.**  
Drels & Krump Mfg. Co., Chicago, Ill.  
Maplewood Machinery Co., Chicago, Ill.
- Brushes—Furnace.**  
Hardware Specialty Co., Fort Wayne, Ind.
- Brass and Copper.**  
American Brass Co., Waterbury, Conn.  
Hussey & Co., C. G., Pittsburgh, Pa.  
Copper & Brass Research Ass'n., New York, N. Y.
- Builders' Hardware.**  
Bullard & Gormley, Chicago, Ill.
- Burners—Oil.**  
McEwen Furnace Co., Kansas City, Mo.  
Standard Fdy. & Mfg. Co., Kansas City, Mo.
- Cans—Garbage.**  
Osborn Co., The J. M. & L. A., Cleveland, Ohio
- Castings—Malleable.**  
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal.**  
Burton Co., W. J., Detroit, Mich.  
Friedley-Voshardt Co., Chicago, Ill.
- Hopson Co., W. C., Grand Rapids, Mich.**  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Chain—Furnace**  
American Chain Co., Bridgeport, Conn.
- Chain—Sash.**  
Parker Supply Co., New York, N. Y.
- Chaplets.**  
Fanner Mfg. Co., Cleveland, Ohio
- Chisels.**  
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Clips—Damper.**  
Carr Supply Co., Chicago, Ill.  
Waterloo Register Co., Waterloo, Iowa
- Coal Chutes.**  
Peerless Foundry Co., Indianapolis, Ind.  
Sykes Co., The, Chicago, Ill.
- Coasters.**  
Auto-Wheel Coaster Co., No. Tonawanda, N. Y.
- Cores—Auto Radiator.**  
Curfman Mfg. Co., F. L., Maryville, Mo.  
G. & O. Mfg. Co., New Haven, Conn.  
Zarco Mfg. Co., New York, N. Y.
- Cornices.**  
Burton Co., W. J., Detroit, Mich.  
Friedley-Voshardt Co., Chicago, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Cut-Offs—Rain Water.**  
Sullivan-Geiger Co., Indianapolis, Ind.
- Doors—Fire.**  
Messenger & Parks Mfg. Co., Aurora, Ill.
- Dry Paste.**  
Carr Supply Co., Chicago, Ill.
- Eaves Trough**  
Abbott Mfg. Co., Cleveland, Ohio  
Berger Bros. Co., Philadelphia, Pa.  
Burton Co., The W. J., Detroit, Mich.  
Clark-Smith Hardware Co., Peoria, Ill.  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
New Jersey Zinc Co., The, New York, N. Y.
- Elbows and Shoes—Conductor.**  
American Rolling Mill Co., Middletown, Ohio  
Dieckmann Co., Ferdinand, Cincinnati, Ohio  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Elevators—Hand and Power.**  
Kimball Bros. Co., Council Bluffs, Iowa
- Enamel—Iron.**  
Black Silk Stove Polish Works, Sterling, Ill.
- Enamel Ware.**  
Lalanc & Grosjean Mfg. Co., Chicago, Ill.
- Enamels—Wood.**  
Cornish & Co., J. B., Chicago, Ill.  
Federal Varnish Co., Chicago, Ill.
- Fence Gates.**  
American Steel & Wire Co., Chicago, Ill.
- Fenders.**  
Meyers Mfg. Co., Fred J., Hamilton, Ohio
- Files.**  
Heller Bros. Co., Newark, N. J.
- Furnace Rings.**  
Walworth Run Fdy. Co., Cleveland, Ohio
- Garages—Metal.**  
Thomas & Armstrong Co., The, London, Ohio
- Guards—Fire.**  
Meyers Mfg. Co., Fred J., Hamilton, Ohio
- Hammers.**  
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Handles—Boiler.**  
Berger Bros. Co., Philadelphia, Pa.
- Handles—File.**  
Parker Supply Co., New York, N. Y.
- Hangers—Eaves Trough.**  
W. C. Hopson Co., Grand Rapids, Mich.
- Heaters—Combination Hot Water.**  
Melbye Bros. Co., Chicago, Ill.
- Heaters—School Room.**  
Haynes-Langenberg Mfg. Co., St. Louis, Mo.  
Meyer Furnace Co., Peoria, Ill.  
Monroe Fdy. & Furnace Co., Monroe, Mich.  
Peerless Foundry Co., Indianapolis, Ind.  
Standard Furnace & Supply Co., Omaha, Neb.
- Heaters—Warm Air.**  
American Furnace Co., St. Louis, Mo.  
Carr Supply Co., Chicago, Ill.  
Dunning Heating Supply Co., Milwaukee, Wis.  
Farquhar Furnace Co., The, Wilmington, Ohio  
Farris Furnace Co., Springfield, Ill.  
Forest City Fdy. & Mfg. Co., Cleveland, Ohio  
Fox Furnace Co., Elyria, Ohio  
Hall-Neal Furnace Co., Indianapolis, Ind.  
Haynes-Langenberg Mfg. Co., St. Louis, Mo.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Hess-Snyder Co., Massillon, Ohio  
Independent Stove Co., Owasso, Mich.  
Kruse Co., Indianapolis, Ind.
- Heaters—Warm Air—Continued.**  
Lamneck Co., W. E., Columbus, Ohio  
Lennox Furnace Co., Marshalltown, Iowa  
Manny Heating Supply Co., Chicago, Ill.  
Meyer Furnace Co., Peoria, Ill.  
Michigan Stove Co., The, Detroit, Mich.  
Monroe Fdy. & Furnace Co., Monroe, Mich.  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Illinois  
Orbon Stove Co., Bellville, Illinois  
Peerless Foundry Co., Indianapolis, Ind.  
Scheible-Moncrief Heater Co., Cleveland, Ohio  
Schwab & Sons Co., R. J., Milwaukee, Wis.  
Standard Fdy. & Mfg. Co., Kansas City, Mo.  
Standard Furnace & Supply Co., Omaha, Neb.  
St. Louis Heating Co., St. Louis, Mo.  
Utica Heater Co., Utica, N. Y.  
Waterloo Register Co., Waterloo, Iowa
- Horse Shoes.**  
American Steel & Wire Co., Chicago, Ill.
- Humidifiers.**  
Haynes, Kansas City, Mo.
- Jobbers—Hardware.**  
Bullard & Gormley Co., Chicago, Ill.  
Clark-Smith Hardware Co., Peoria, Ill.
- Kitchen Utensils.**  
Lalanc & Grosjean Mfg. Co., Chicago, Ill.
- Ladders.**  
Walchli Mfg. Co., St. Louis, Mo.
- Lath—Expanded Metal.**  
Milwaukee Corrugating Co., Milwaukee, Wis.
- Machines—Crimping.**  
Bertsch & Co., Cambridge City, Ind.
- Machinery—Culvert.**  
Bertsch & Co., Cambridge City, Ind.
- Machines—Razor Blades.**  
Hyfield Mfg. Co., New York, N. Y.
- Machines—Stove Pipe.**  
Hemp & Co., St. Louis, Mo.
- Machines—Tinsmiths'.**  
Bertsch & Co., Cambridge City, Ind.  
Drels & Krump Mfg. Co., Chicago, Ill.  
Ewert & Kutscheid Mfg. Co., Chicago, Ill.  
Hemp & Co., St. Louis, Mo.  
Maplewood Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Whitney Metal Tool Co., Rockford, Ill.
- Mailing Lists.**  
Ross-Gould, St. Louis, Mo.
- Metals—Perforated.**  
Harrington & King Perforating Co., Chicago, Ill.
- Miters.**  
Friedley-Voshardt Co., Chicago, Ill.
- Nails—Slatting.**  
Hussey & Co., C. G., Pittsburgh, Pa.
- Nails—Wire.**  
American Steel & Wire Co., Chicago, Ill.
- Ornaments—Sheet Metal.**  
Friedley-Voshardt Co., Chicago, Ill.  
Gerock Bros. Mfg. Co., St. Louis, Mo.
- Patterns—Furnace and Stove.**  
Cleveland Castings Pattern Co., Cleveland, Ohio  
Quincy Pattern Co., Quincy, Ill.  
Shaw & Son Co., The Geo. E., Cleveland, Ohio  
Vedder Pattern Works, Troy, N. Y.
- Pipe and Fittings—Furnace.**  
Carr Supply Co., Chicago, Ill.  
Dunning Heating Supply Co., Milwaukee, Wis.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Lamneck Co., W. E., Columbus, Ohio  
Manny Heating Supply Co., Chicago, Ill.  
Meyer & Bro. Co., F., Peoria, Ill.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Standard Furnace & Supply Co., Omaha, Neb.
- Pipe and Fittings—Stove.**  
Hemp & Co., St. Louis, Mo.  
Meyer & Bro. Co., F., Peoria, Ill.  
Sullivan-Geiger Co., Indianapolis, Ind.
- Pipe—Conductor.**  
Berger Bros. Co., Philadelphia, Pa.  
Burton Co., W. J., Detroit, Mich.  
Clark-Smith Hdw. Co., Peoria, Ill.  
Dieckmann Co., Cincinnati, Ohio  
Friedley-Voshardt Co., Chicago, Ill.  
Hussey & Co., C. G., Pittsburgh, Pa.  
Lupton's Sons Co., David, Philadelphia, Pa.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
New Jersey Zinc Co., The, New York, N. Y.
- Polish—Metal and Stove.**  
Black Silk Stove Polish Works, Sterling, Ill.
- Posts—Steel Fence.**  
American Steel & Wire Co., Chicago, Ill.
- Punches.**  
Bertsch & Co., Cambridge City, Ind.  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Whitney Metal Tool Co., Rockford, Ill.
- Punches—Combination Bench and Hand.**  
Parker Supply Co., New York, N. Y.  
Whitney Metal Tool Co., Rockford, Ill.
- Punches—Hand.**  
Parker Supply Co., New York, N. Y.  
Whitney Metal Tool Co., Rockford, Ill.
- Quadrants—Damper.**  
Parker Supply Co., New York, N. Y.
- Ranges—Combination Gas & Coal.**  
American Stove Co., St. Louis, Mo.  
Hoosier Stove Co., Marion, Ind.  
Independent Stove Co., Owasso, Mich.  
Malleable Iron Range Co., Beaver Dam, Wis.  
Matthews Banner Range Co., South Bend, Ind.  
Quick Meal Stove Co., St. Louis, Mo.
- Ranges—Gas.**  
American Stove Co., St. Louis, Mo.  
Clark & Co., Geo. M., Chicago, Ill.  
Dangler Stove Co., Cleveland, O.  
Hoosier Stove Co., Marion, Ind.  
Matthews Banner Range Co., South Bend, Ind.  
Quick Meal Stove Co., St. Louis, Mo.

**Rasps.**  
Heller Bros., Newark, N. J.

**Register Shields.**  
Hall-Neal Furnace Co., Indianapolis, Ind.

**Registers—Warm Air.**  
Carr Supply Co., Chicago, Ill.  
Dunning Heating Supply Co., Milwaukee, Wis.  
Hart & Cooley Co., New Britain, Conn.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Majestic Co., Huntington, Ind.  
Manny Heating Supply Co., Chicago, Ill.  
Rock Island Register Co., Rock Island, Ill.  
Standard Furnace & Supply Co., Omaha, Neb.  
Stearns Register Co., Detroit, Mich.  
Tuttle & Bailey Mfg. Co., Chicago, Ill.  
Walworth Run Fdy. Co., Cleveland, Ohio  
Waterloo Register Co., Waterloo, Iowa

**Regulators—Damper.**  
Parker Supply Co., New York, N. Y.

**Repair Parts—Auto Radiator.**  
Curfman Mfg. Co., F. L., Maryville, Mo.  
G. & O. Mfg. Co., New Haven, Conn.

**Repairs—Stove & Furnace.**  
Hessler Co., H. E., Syracuse, N. Y.

**Ridging.**  
American Rolling Mill Co., Middletown, Ohio

**Rivets—Stove.**  
Kirk-Latty Mfg. Co., Cleveland, Ohio

**Roasters.**  
Lalanc & Grosjean Mfg. Co., Chicago, Ill.

**Rod Clips—Damper.**  
Parker Supply Co., New York, N. Y.

**Rods—Stove.**  
Kirk-Latty Mfg. Co., Cleveland, Ohio

**Rolls—Forming.**  
Bertsch & Co., Cambridge City, Ind.

**Roof—Flashing**  
Hessler Co., H. E., Syracuse, N. Y.

**Roofing—Iron and Steel.**  
American Rolling Mill Co., Middletown, Ohio  
Burton Co., W. J., Detroit, Mich.  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Friedley-Voshardt Co., Chicago, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Inland Steel Co., Chicago, Ill.  
Sykes Co., The Chicago, Ill.

**Roofing—Zinc.**  
Illinois Zinc Co., New York, N. Y.  
New Jersey Zinc Co., The, New York, N. Y.

**Rubbish Burners.**  
Hart & Cooley Co., New Britain, Conn.

**Schools—Sheet Metal Trades.**  
Zideck School of Sheet Metal Trades, New York, N. Y.

**Schools—Sheet Metal Pattern Drafting.**

St. Louis Technical Institute, St. Louis, Mo.  
Zideck Auto Radiator School, New York, N. Y.

**Schools—Automobile Radiator Repairing.**  
Zideck Auto Radiator School, New York, N. Y.

**Screens—Perforated Metal.**  
Harrington & King Perforating Co., Chicago, Ill.

**Screws—Sheet Metal.**  
Parker Supply Co., New York, N. Y.

**Shears—Hand and Power.**  
Philadelphia, Pa.  
Ewert & Kutscheld Mfg. Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Viking Shear Co., Erie, Pa.

**Sheets—Asbestos**  
Manny Heating Supply Co., Chicago, Ill.

**Sheets—Black and Galvanized.**  
American Rolling Mill Co., Middletown, Ohio  
Inland Steel Co., Chicago, Ill.  
Osborn, The J. M. & L. A., Cleveland, Ohio  
Sykes Co., The Chicago, Ill.

**Sheets—Iron.**  
American Rolling Mill Co., Middletown, Ohio

**Shields—Radiator.**  
Thomas & Armstrong Co., The London, Ohio

**Shingles—Zinc.**  
Illinois Zinc Co., New York, N. Y.

**Sifters—Ash.**  
Diener Mfg. Co., G. W., Chicago, Ill.

**Sifters—Flour.**  
Meyers Mfg. Co., Fred J., Hamilton, Ohio

**Sky Lights.**  
Burton Co., W. J., Detroit, Mich.  
Sykes Co., The Chicago, Ill.

**Smoke Pipe—Cast Iron.**  
Manny Heating Supply Co., Chicago, Ill.  
Waterloo Register Co., Waterloo, Iowa

**Solder.**  
Chicago Solder Co., Chicago, Ill.

**Soldering Furnaces.**  
Ashton Mfg. Co., Newark, N. J.  
Bernz Co., Otto, Newark, N. J.  
Burgess Soldering Furnace Co., Columbus, Ohio  
Clayton & Lambert Mfg. Co., Detroit, Mich.  
Diener Mfg. Co., G. W., Chicago, Ill.

Double Blast Mfg. Co., North Chicago, Ill.  
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.  
Quick Meal Stove Co., St. Louis, Mo.  
Turner Brass Works, Sycamore, Ill.

**Specialties—Hardware.**

Atkins & Co., Inc., E. C., Indianapolis, Ind.  
Bullard & Gormley, Chicago, Ill.  
Diener Mfg. Co., G. W., Chicago, Ill.  
Hardware Specialty Co., Fort Wayne, Ind.  
Heller Bros. Co., Newark, N. J.  
Hessler Co., H. E., Syracuse, N. Y.  
Hyfield Mfg. Co., New York, N. Y.  
Lovell Mfg. Co., Erie, Pa.  
Parker Supply Co., New York, N. Y.  
Standard Fdy. & Mfg. Co., Kansas City, Mo.  
Vaughan & Bushnell Mfg. Co., Chicago, Ill.  
Walchli Mfg. Co., St. Louis, Mo.

**Sporting Goods.**

Bullard & Gormley, Chicago, Ill.

**Stains—Oil and Acid.**

Federal Varnish Co. Chicago, Ill.

**Stars—Hard Iron Cleaning.**

Fanner Mfg. Co., Cleveland, Ohio

**Statuary.**

Friedley-Voshardt Co., Chicago, Ill.  
Gerock Bros. Mfg. Co., St. Louis, Mo.

**Stoves—Camp.**

Quick Meal Stove Co., St. Louis, Mo.

**Stoves—Gasoline and Kerosene.**

American Stove Co., St. Louis, Mo.  
Clark & Co., Geo. M., Chicago, Ill.  
Dangler Stove Co., Cleveland, O.  
Quick Meal Stove Co., St. Louis, Mo.

**Stoves and Ranges.**

American Stove Co., St. Louis, Mo.  
Clinton Furnace Stove Co., Clinton, Ind.  
Copper Clad Malleable Range Co., St. Louis, Mo.  
Hoosier Stove Co., Marion, Ind.  
Gohman Bros. & Kahler, New Albany, Ind.  
Independent Stove Co., Owosso, Mich.  
Jungers Stove & Range Co., Grafton, Wis.  
Malleable Iron Range Co., Beaver Dam, Wis.  
Michigan Stove Co., The, Detroit, Mich.  
Orben Stove Co., Belleville, Ind.  
Quick Meal Stove Co., St. Louis, Mo.  
Standard Fdy. & Mfg. Co., Kansas City, Mo.

**Stove Pipe Reducer.**

Sullivan-Geiger Co., Indianapolis, Ind.

**Tacks, Staples, Spikes.**

American Steel & Wire Co., Chicago, Ill.

**Tiles and Shingles—Metal.**

Burton Co., W. J., Detroit, Mich.  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Hopson Co., W. C., Grand Rapids, Mich.  
Illinois Zinc Co., New York, N. Y.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Thomas & Armstrong Co., The, London, Ohio

**Tinplate.**

Osborn Co., The J. M. & L. A., Cleveland, Ohio

**Tin—Perforated.**

Harrington & King Perforating Co., Chicago, Ill.

**Tools—Auto Repair.**

Curfman Mfg. Co., F. L., Maryville, Mo.

**Tools—Carpenter.**

Atkins & Co., Inc., E. C., Indianapolis, Ind.  
Vaughan & Bushnell Mfg. Co., Chicago, Ill.

**Tools—Tinsmith's.**

Bertsch & Co., Cambridge City, Ind.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Ewert & Kutscheld Mfg. Co., Chicago, Ill.  
Hopson Co., W. C., Grand Rapids, Mich.  
Maplewood Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Vaughan & Bushnell Mfg. Co., Chicago, Ill.  
Viking Shear Co., Erie, Pa.  
Whitney Mfg. Co., W. A., Rockford, Ill.  
Whitney Metal Tool Co., Rockford, Ill.

**Torches.**

Ashton Mfg. Co., Newark, N. J.  
Bernz Co., Otto, Newark, N. J.  
Burgess Soldering Furnace Co., Columbus, Ohio  
Clayton & Lambert Mfg. Co., Detroit, Mich.  
Diener Mfg. Co., G. W., Chicago, Ill.  
Double Blast Mfg. Co., North Chicago, Ill.  
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.  
Quick Meal Stove Co., St. Louis, Mo.  
Turner Brass Works, Sycamore, Ill.

**Transit Companies.**

Cleveland & Buffalo Transit Co., Cleveland, Ohio

**Trimming—Stove.**

Fanner Mfg. Co., Cleveland, Ohio

**Valves—Humidifier.**

Haynes, Kansas City, Mo.

**Varnishes.**

Cornish & Co., J. B., Chicago, Ill.  
Federal Varnish Co., Chicago, Ill.

**Ventilators.**

Berger Bros. Co., Philadelphia, Pa.  
Friedley-Voshardt Co., Chicago, Ill.  
Messenger & Parks Mfg. Co., Aurora, Ill.  
Milwaukee Corrugating Co., Milwaukee, Wis.  
Standard Ventilator Co., Lewisburg, Pa.  
Thomas & Armstrong Co., The, London, Ohio

**Ventilators—Ceiling.**

Hart & Cooley Co., New Britain, Conn.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Tuttle & Bailey Mfg. Co., New York

**Water Heaters—Oil Burning.**  
Dangler Stove Co., Cleveland, O.

**Wire.**

American Steel & Wire Co., Chicago, Ill.

**Wrenches.**

Coes Wrench Co., Worcester, Mass.

**Wringers—Clothes.**

Lovell Mfg. Co., Erie, Pa.

**Zinc.**

Illinois Zinc Co., New York, N. Y.  
New Jersey Zinc Co., The, New York, N. Y.

**Zinc—Slab.**

Illinois Zinc Co., New York, N. Y.



## WANTS AND SALES

For paid yearly subscribers, **AMERICAN ARTISAN AND HARDWARE RECORD** will insert under this head advertisements of not more than fifty words **WITHOUT CHARGE**. Employers wishing to secure employes, parties desiring to purchase or sell business, secure partners, or to exchange, etc., will find that these pages offer excellent opportunities to satisfy their wants. Clerks and tinsmiths looking for situations will find it to their advantage to use these columns. Those who respond to these announcements please mention that they "READ THE ADVERTISEMENT IN AMERICAN ARTISAN AND HARDWARE RECORD."

## BUSINESS CHANCES

**Lightning Rods**—Sell our famous Copper Cable and Section Rods—endorsed and labeled by Underwriter's Laboratories. Special Patented One Piece Air Terminals—and many other exclusive features with Rock Bottom Prices. Don't do all the hard work and let your competitor put on the rods. Write today for agency. **L. K. DIDDIE CO.**, Marshfield, Wis.

**For Sale or Exchange**—A good Stock and Grain Farm of 333½ acres located in Iowa. Want good Hardware Store in good location or will consider Hardware and General Store. For particulars write **J. M. Cornette**, Kewanee, Ill. 7-3t

**For Sale**—Warm Air Heating and Sheet Metal Business. Established 10 years. A live proposition for little money. Situated on one of Chicago's best streets. Address B-55, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 5-3t

**For Sale**—Good going hardware business in town of 1,500 population in Northern Illinois. Last year business \$22,000. Stocks and fixtures about \$8,000, will reduce to suit purchaser. For particulars write B-51, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 3-3t

**Wanted**—Small hardware, radiator and tin shop or plumbing shop west of Omaha, Nebraska, or will consider partnership arrangement. Must be well located and stock in good condition. Give full particulars in first letter. **C. J. McClure**, 127 Townsend Avenue, Eagle Rock, California. 6-3t

**For Sale**—Warm air heating and sheet metal business, established 20 years. A live proposition for one or two first class men to acquire whole or half interest. Have large furnace repair trade. First class machinery. Located in largest city South, having 450,000 inhabitants. For particulars address B-52, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 4-3t

**For Sale**—A clean stock of general hardware in a small town in South Dakota. Good farming country and large territory. Four years ago they raised as much as 52 bushels wheat per acre. Two churches and high school. A good chance for a tinner to make money. Reason for selling, am retiring. Address B-59, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t

**Business Chances**—Opportunity for an experienced sheet metal worker to take active part and invest from \$500 to \$1,000 in a well established general job shop now doing a good business with plenty of opportunity to expand in a live manufacturing city in Northern Ohio. Good location, cheap rent, reason for selling, poor health. Address B-56, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 6-3t

## BUSINESS CHANCES

**For Sale**—Plumbing and tin shop good location on main street, only shop in town. Tools and stock will invoice about \$1,000. For further information write **R. A. Muxen**, Doland, South Dakota. 4-3t

**For Sale**—Well equipped sheet metal shop in county seat town of 2,000 population. Will invoice about \$2,000, or will rent on a 50-50 basis to mechanic who can and will handle the business. Inexperienced tinner need not apply. **H. W. Darrow**, Winamac, Indiana. 6-2t

**Business Chances**—A first class sheet metal worker, capable of handling shop and men would consider partnership in going concern, or would rent or manage on commission basis. Address with full particulars B-57, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t

## HELP WANTED

**Wanted**—Three good furnace installers needed. Steady work. **Campbell Heating Co.**, Des Moines, Iowa. 4-3t

**Wanted**—At once. First class tinner and furnace man. Good job for right man. **Leo A. Hern**, Morris, Illinois. 6-3t

**Wanted**—Tinner for general sheet metal and roofing work. Steady work. Address **Geisler Brothers**, 5th and Locust Streets, Dubuque, Iowa. 7-3t

**Wanted**—Job shop tinner, also blow pipe men and warm air furnace men. 90c per hour. Union shop. No labor trouble. **Mohr-Jones Hardware Company**, Racine, Wisconsin. 4-3t

**Wanted**—At Once—First class tinner and furnace man. Steady work and good living conditions. Wire, write or come. Union shop. **Bloomington Radiator and Sheet Metal Works**, Bloomington, Indiana. 7-3t

**Wanted**—At Once—Sheet metal worker experienced in Cornice and Ventilation. Must be able to work from blue prints and lay out own work. Give full particulars in first letter. **H. J. O'Neill**, 219 South Broadway, Rochester, Minnesota. 7-3t

**Wanted**—At Once—An A-1 tinner and furnace man, must be good workman able to lay out and do work that comes into ordinary all around tin and furnace shop. Steady work and good pay to right man. Wire. **R. H. Vandeveld & Co.**, Dyersburg, Tennessee. 7-3t

**Wanted**—At Once—Three good all around sheet metal workers who can do furnace work. Good job and wages to the right men. Mostly inside work. Open shop. No labor trouble. **Jewett Cornice & Roofing Co.**, 602-604 Market Street, San Antonio, Texas. 7-3t

**Wanted**—By August 15th, or September 1st, experienced furnace man for pipe and pipeless furnace work. One that can figure jobs and make up finished material. Give reference and salary expected in first letter. Address **Huron Furnace Company**, Huron, South Dakota. 5-3t

**Wanted**—Several men for metal work, making chick drinking fountains, more or less experienced in galvanizing work, also one man capable of doing tin, furnace and plumbing work. Married man not over 35 preferred. Steady employment. Please write **G. T. Mueller and Son**, Columbus, Wisconsin. 4-3t

## SITUATION WANTED

**Situation Wanted**—By an all around tinner and radiator repair man, or would consider a half working interest in a good going shop. Address **Tinner**, 27 West Iroquois Street, Freeport, Illinois. 6-3t

**Situation Wanted**—By tinner and furnace man, have had ten years' experience, married and want steady employment. State wages and particulars in first letter. Address **J. H. Dennick**, 345 West 2nd Street, Spencer, Iowa. 4-3t

## SITUATION WANTED

**Situation Wanted**—By an all around tinner and furnace man capable of taking full charge of shop and managing same. Am middle age and want a steady place. State particulars, also wages. Illinois preferred. Address **G. W. Corman**, 406 East Park Place, Peoria, Illinois. 7-3t

**Situation Wanted**—By radiator repair and construction man with 8 years' experience. Also understands warm air furnace, plumbing and general sheet metal work. Address B-53, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill. 4-3t

**Situation Wanted**—By tinner and furnace man, also do ordinary plumbing. Have had 15 years' experience. Married, 39 years old. Can furnish best of references. State wages in first letter. Address B-54, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 5-3t

**Situation Wanted**—By September 1st. Sheet Metal worker with 18 years' experience in general lines, including cornice, furnace, jobbing and special work. First class shop man and pattern cutter. Address B-58, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t

## TINNERS' TOOLS

**Wanted**—To buy a set or part of set of Tinner's Tools. Must be in good working order and cheap. **Geo. E. Ainsworth**, 59 West Locust Street, Canton, Illinois. 4-3t

**Wanted**—A set of tinner's tools. Give itemized list, full details and price with physical conditions of tools and their make by return mail. Address **Guenther Hardware Co.**, Owensboro, Kentucky. 6-3t

**For Sale**—1-8 foot B & K Cornice Brake, \$85; 1-No. 2 Niagara Beader, 10" Throat, geared, 3 pair rolls with std., \$30; 1-large Niagara Turner, 2 sets faces with std., \$22; 1-large Burring Machine P. S. & W., \$18, with std.; 1-small Burring Machine, Niagara, with std., \$16; 1-geared crimper and beader std., 2 set rolls, \$20; 1-30" Forming Rolls, \$10; 1-30" adj. Niagara Bar Folder, \$30. These machine tools have had very little use and are as good as new. Write **E. R. Huston**, Willard, Ohio. 4-3t

## BOOKS

**FREE—FREE**—We will send FREE to every Sheet Metal Contractor in the country who will write us, a copy of our new 10-page book catalog which lists the best Trade Books and Patterns to be had. The first page of this catalog tells how to save money on your book purchases. Write for your copy today. **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois.

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